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THE

VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

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EDITED BY

GEORGE FLEMING, F.R.G.S.

Veterinary Surgeon, 2nd Life Guards.

VOLUME V., 1877.

VETERINARY MEDICAL ASSOCIATION ESTABLISHED 1836

London:

BAILLIÈRE, TINDALL & COX, King William Street, Strand.
PARIS: BAILLIÈRE. MADRID: BAILLY-BAILLIÈRE.
NEW YORK: WOOD & CO. CALCUTTA: THACKER, SPINK & CO.
AUSTRALIA: GEORGE ROBERTSON, MELBOURNE.

Printed by Hazell, Watson, and Viney, London and Aylesbury.

VETERINARY MEDICAL ASSOCIATION INSTITUTED 1836

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JULY, 1877.

CARDIAC HÆMATOMATA AND THROMBI.*

BY PROFESSOR WALLEY, EDINBURGH VETERINARY COLLEGE.

THE subjects upon which I am about to treat have received but scant notice at the hands of veterinary surgeons; many practitioners, indeed, being utterly ignorant of their importance—pathologically or otherwise. My attention has been directed more particularly to these subjects in connection with legal proceedings, and it is to a consideration of the legal aspect I wish to lead your minds to-night, in order that some definite conclusions may be arrived at, which shall be tolerably sure guides to all veterinary practitioners.

My object is, chiefly, to consider two distinct—though often confounded—conditions: viz., Cardiac Hæmatomata, and Cardiac *ante-mortem* Thrombi.

With *post-mortem* clot we have little to do, and will dismiss it in a few words.

Coagulation of blood in the heart may take place immediately at death, or subsequently. In either case, the clots present distinctive characters.

First, masses of coagulated blood with the red cells diffused

* Read at the Central Veterinary Society's Meeting on May 8th.

more or less equally through them, producing either a uniformly black, or a mottled appearance.

Secondly, clots, more or less extensive, presenting a stratified appearance and character, owing to the separation and subsidence of the red cells and the coagulation of the fibrin; these clots differ in no respect from the coagula formed by blood when withdrawn from the vessels during life, and set at rest. The layers of fibrin correspond to the uppermost part of the heart, the cells (subsiding by their gravity) to the lower portions of the cavity.

They are never united with any degree of firmness to the endocardium, though a little force may be required in order to detach them from the interstices of the *musculi pectinati*, from the valves, the *chordæ tendinæ*, or moderator bands; neither have such clots any marked degree of cohesive affinity, or of fibrillization.

The localization of *post-mortem* clot will depend upon the condition of the lungs, the systemic circulation, and the heart itself.

If pulmonary obstruction exists, the clot will be formed in the right,—if systemic, venous, or arterial obstruction, in the left ventricle; while, if weakened conditions of the walls of the heart, either physiologically or organically, exist, or if death occurs from cardiac relaxation or debility, the coagulation will take place simultaneously in all the cavities.

Cardiac Hæmatomata.

So-called "cardiac blood-tumours" nearly always originate in endocardial extravasation. The extravasate, pressing upon the endocardium, interferes with its nutrition; it becomes dry, loses its glistening appearance, and finally yields to absorption or pressure.

Sub-endocardial extravasation is very frequently a symptom of blood depravation or degradation, but it may arise from any sudden and violent spasmodic action of the heart; hence is an accompaniment of death from fright, and from hæmorrhage in other and important organs as the result of rupture. In my experience it has occurred most frequently in the left ventricle;

but, curiously enough, the two best specimens I have seen of Cardiac Hæmatoma were located in the right heart, and in close proximity to the base of the tricuspid valve.

I think this apparent anomaly may possibly be explained by assuming that large extravasations in the left heart would produce instant death, or, from the greater pressure put upon the left side, the endocardium would give way while the blood was yet fluid, and allow of its escape into the general circulation, the resulting wound healing up without any further consequence than the formation of a cicatrix.

In the formation of these hæmatomata, we find that the more solid and viable portions of the extravasate undergo coagulation (the liquid portions becoming absorbed), and ultimately imperfect organization takes place, which may again be followed by adipose, molecular, or other form of degeneration.

If the clot remains solid, it produces no further mischief than that which results from mechanical interference with the action of the heart, the symptoms of which would be regulated by the size and situation of the tumour, but would necessarily be ambiguous.

If the clot softens, an abscess is the result, the endocardium becomes inflamed, thickened, and ultimately ulcerated, allowing of the discharge of its contents into the adjoining cavity. Small masses may become detached, carried away by the circulation, lodged in other vessels at a distance, and originate embolisms.

Occasionally the blood clot, while remaining firm, gives rise to roughening of the superjacent endocardium—probably absorption of it: the roughened surface acts as a nidus for the deposition of lymph from the blood. This new layer, by contracting and corrugating, favours secondary coagulation, and the process goes on indefinitely, until a beautifully stratified and large tumour is produced, composed mainly of coagulated fibrin intermixed with a greater or less quantity of blood corpuscles. Even in this case, portions of the clot will be found softened and broken down. It is easy to understand that, in addition to mechanical interference with the action of the heart, such a formation must ultimately lead to hypertrophy of the wall of the cavity in which it is situated.

To illustrate these remarks, I introduce to your notice three specimens. The first is a large endocardial extravasation, situated in the body of one of the *musculi papillares* of the left ventricle. When first removed, it showed the roughened dry condition of the endocardium very markedly; and judging from its appearance, I have not the slightest doubt that, had the animal lived sufficiently long, the endocardium would have eventually given way to the pressure put upon it.

The second specimen is that of a hæmatoma in connection with the base of the tricuspid valve, and which had undergone partial softening, portions of it having evidently become detached, and in all probability lodged in the vessels of the spine as the animal became paralysed prior to death. Extensive disease of the liver and kidneys was also present—owing, I think, to interference with the venous circulation, from the backward pressure of blood which was induced by the incompetent state of the tricuspid valve.

The third specimen is that of a hæmatoma, also connected with the right auriculo-ventricular ring, on the surface of which secondary coagulation in concentric layers has gone on to such an extent as to produce the largest mass of the kind which has yet come under my notice. The original hæmatoma appears of a somewhat homogeneous character, and it is penetrated, to a considerable depth, by granulations springing from the endocardial surface.

This specimen was removed (as you see it) from the heart of a cow; but unfortunately I could glean nothing of the history of the case, except that the cow was much emaciated.

Ante-Mortem Clots.

The Predisposing Causes of *ante-mortem* coagulation are: any disease of the endocardium, by which a rough surface is produced, as inflammation, ulceration from the pressure and softening of extravasates or hæmatomata; cicatrices, calcareous degeneration, etc., and elevations or injuries of the endocardium by foreign bodies penetrating from the stomach, or by the lodgment of entozoa beneath it.

The actual causes are diminished cardiac power, with or without a plastic condition of the blood, as the result of some zymotic, septic, or debilitating affection, or from the action of poisons, Congestion of the Lungs, Pulmonary Thrombi, extensive arterial Embolism or Thrombism, or general venous stagnation.

In practice we find that these clots, when resulting from Pulmonary Congestion or Thrombism, are always located in the right heart, and as a rule clotting commences in the pulmonary artery or its branches, and increases in extent in a backward direction towards the *conus arteriosus*, until the pulmonary artery becomes obliterated and the *conus arteriosus* filled. In clotting, as the result of an altered condition of the blood and diminished cardiac power (as in zymotic or septic affections), we usually find the left ventricle or auricle to be the seat of the thrombus. In the auricle it may originate in the *musculi pectinati* of the apex, and extend towards the base, thence through the auriculo-ventricular opening into the ventricle or along the pulmonary veins—in the former case producing incompetency of the mitral valve, in the latter acute pulmonary congestion.

In the ventricle it may commence at the apex from the moderator bands or the inner *carnea columna ;* but this method of clotting is, I think, a rare occurrence—as a rule the coagulation commencing in the aortæ and their branches, and extending backwards into the ventricle.

Ante-mortem clot as the result of Zymotic or Septic disease, Debility, or Anæmia, is brought about by inability of the cardiac walls to contract upon their contents, owing to one or other, or to a combination, of the following factors,—viz., the blood being impure or impoverished, and not producing the stimulating effect of healthy blood upon the cardiac nerves or the circulating nerve centre; debility of the cardiac muscles from insufficient nourishment, or from the supply of blood being (though healthy) too small in quantity.

In *ante-mortem* clot as the result of Pulmonary Congestion, several factors are also in operation to produce it: they are, increased plasticity of the blood; obstruction to the flow of blood through the pulmonary arteries; and the absence of the

normal stimulus (oxygen) in the blood. In Pulmonary Thrombism the same factors are in operation.

Symptoms, or indications of the formation of cardiac thrombi may be (1) Unmistakable and urgent; (2) Insidious and unobserved or unsuspected.

In the first case, the pulse becomes irregular in every sense of the word—in volume, force, and rhythm—and is not in relation with the action of the heart; the breathing laboured and distressed, and even oral and gasping; the head extended, the forelegs abducted so as to form fixed props, the mucous membranes of a livid hue, the temperature lowered, and the body bedewed with perspiration; the animal is incapable of progressing, and if urged to do so falls over; the superficial veins are distended, jugular pulse and jugular vibration are marked; the carotids struggle violently and spasmodically, the heart beats tumultuously, and imparts a sensation to the hand as though it were tumbling topsy-turvy; while on auscultation various cardiac sounds are heard—as blowing, fluttering, grating and gurgling. The animal shows great uneasiness by constantly moving the fore-legs, grunting and throwing up the head; and the countenance is expressive of extreme anxiety.

Whenever irregularity of the heart's action is detected in the course of an attack of Pulmonary Congestion, clotting may be feared, and in case of recovery resulting valvular disease dreaded. In the same way, if the symptoms I have described make their appearance during the progress of zymotic or septic affections, the prognosis must be unfavourable. If the clotting is extensive life cannot continue long—in fact, from two or three to twelve or twenty-four hours may be set down as the limit.

In the second class of cases the animal often evinces no symptoms to attract particular attention, or to direct the mind to cardiac clotting; in a few instances—as was the case in the animal from which the clot I exhibit was removed by my colleague, Mr. Baird—the heart may have been weak and irregular in its action for a day or two, and other signs of ill health may have been apparent; but it not unfrequently happens that a horse which has apparently recovered from an attack of ordinary Cold or a low Fever, and has been left all right over night, is found by

the attendant, to his astonishment, dead in his stall or box, on his going in to feed him in the early morning; and on *post-mortem* examination no possible cause of death can be discovered, except a large *ante-mortem* cardiac clot.

Treatment.—Treatment can only be considered as applying to those cases in which good grounds exist for the belief that cardiac clotting is taking place, or is actually in existence; and, although it may be a forlorn hope to attempt to do battle with such an enemy, it is, nevertheless, our duty to persevere to the end.

The primary and paramount necessity of paying strict attention to the general comfort of the animal, to the allowance of a plentiful supply of pure cold air and water, and to the equalizing of the circulation by friction, rugs, bandages, etc., cannot be too strongly urged. The aims of treatment are—to preserve the fluidity of the blood, to rouse and support the nervous energy, and to stimulate the action of the heart and the systemic circulation. How can these ends be accomplished?

Firstly, by the administration of a solvent; and for this purpose we have nothing equal to carbonate of ammonia.

Secondly, by stimulating the respiratory centres; and here again ammonia comes to our aid.

Thirdly, by the repeated application of smart irritants—as mustard or ammonia liniment to the skin.

Fourthly, by judicious administration of such diffusible and general stimulants as brandy, whisky, and spirits of nitric æther.

Is venesection of any use? In exceptional cases, and to a moderate extent, it may be—by diminishing cardiac and pulmonary pressure.

Will tracheotomy be of any avail? As a rule, *none*, because there is no obstruction to the ingress of air through the larynx and trachea.

Should we be justified in having recourse to intra-venous injection of ammonia? Most positively, *yes*, in desperate cases, as it can be done with impunity and without much difficulty.

The characteristic *post-mortem* appearances of these clots are

(as was well shown in the clot which I present for your examination) a fair amount of cohesion, affinity, solidarity, and resistance; distinct fibrillization which, as also the firmness, is most marked in the parts of the clot first formed; slight adhesion to the endocardium, and particularly in those parts of the heart in which processes from the clot are inserted between the natural elevations, as between the *musculi pectinati*, or have become entangled in the *chordæ tendinæ* or the moderator bands. As a rule they are decolorized, or of a pale yellow hue, and form perfect casts of the parts in which they are found. Intermixture of white cells to a greater or lesser extent is always present, but there is no vascularity.

And now I come to one of the most important questions in connection with this subject—viz., its medico-legal aspect.

I need scarcely point out to you the fact that if a man sells a horse with a warranty of soundness he is liable (unless the warranty is accompanied with a distinct limitation of time) for the value of the animal if he succumbs to the effects of an occult organic disease, no matter how long a period may have elapsed between the date of sale and date of death, provided it can be proved by scientific evidence that the particular organic disease *must* have been in existence when the animal was sold. Probably the task of affixing limitations to the existence of a special organic disease is one of the most invidious and often most unsatisfactory duties which the veterinary surgeon is called upon to perform; and it is in connection with occult diseases, of the existence of which it may be reasonably presumed he had no knowledge, that the law bears so hardly upon the vendor of horses. Equally hard, it may be said, would it be on the vendee (were no such law in existence), if he had put into his hands at a large price, as a sound animal, one which was known to be suffering from some hidden, and eventually fatal, affection. It is just here that the law should step in and punish a man heavily (for fraudulence), who sold as a sound one an animal suffering from some undetectable defect of which he had a foreknowledge.

In this respect the French law of warranty is more just than ours, as it takes no cognizance of patent, but protects the vendee

from occult defects, though always with a reasonable limitation of time for detection, in favour of the vendor.

In the case of a Cardiac Hæmatoma, where distinct organization in some one or other of its parts can be detected, the period of existence may justly be laid down as one of some weeks or months; but it is utterly impossible, even here, that any arbitrary limitation can be made.

In the case of an *ante-mortem* clot, we have more reliable grounds upon which to base an opinion. If the clot is homogeneous, if it is non-adherent to the endocardium, if it is of sufficient size and in such a situation as to warrant us in saying that it could not have existed without producing unmistakable external evidence of its presence, then we may safely pronounce the opinion that its period of existence may be measured by hours. Mere cohesion, decoloration or resistance, are no guides, as we are all acquainted with the physical characters of fibrin which has been obtained in a few minutes by the whipping of fresh blood.

If, on the contrary, the clot is stratified, adherent (even in a small degree) to the endocardium, microscopically gives evidence of organization by the presence of vessels in its structure, and is so situated as not to interfere with the mechanism of the heart until it has attained a certain size,—we may safely extend our period of limitation to one of weeks.

ON THE TREATMENT OF GANGRENOUS AND SLOUGHING WOUNDS.

BY JOHN DOWLING ALLMAN, CREECHURCH LANE, LONDON.

THERE are few veterinary practitioners with any amount of practice, who are not frequently disappointed and sorely vexed with the difficulties they have to surmount in the treatment of gangrenous and sloughing wounds. There are numerous applications employed in the treatment of these troublesome and obstinate sores; but none has received so much attention as carbolic acid—not only in veterinary, but also in human

practice, as it has been very largely used in the treatment of all kinds of unhealthy wounds. Carbolic acid, after being held in high esteem as a remedy during a considerable period of time, has of late years passed almost into disuse,—and not without reason, as it has frequently disappointed those who employed it, and damaged the reputation of the practitioner. The circumstances which have determined this loss of favour are not difficult to discover, and will be exhibited in the brief historical sketch of the remedy which I intend to lay before the readers of the *Veterinary Journal.*

Professor Lister was one of the first who employed carbolic acid in the treatment of wounds; and there can be no doubt that if his scientific views could be carried out, the remedy would bear favourable comparison with any other known to professional and scientific men. But the rules which the Professor has laid down for his antiseptic treatment are too difficult, involve too much time, and would be impossible to carry out in any ordinary practice, as time and expedition are of importance in the present busy age. I believe the Professor has discovered this, and has consequently altered his antiseptic treatment of late.

His views on the carbolic treatment may be summarized thus:—When blood is effused into healthy tissues, it is absorbed, exciting no inflammation, suppuration, or fever. If, however, the skin is broken, so that the wound communicates with the air, the effused blood quickly decomposes, exciting both inflammation and suppuration. These phenomena are not excited by the air itself, but by the organic germs floating in it; so that if the air coming in contact with the wound can be freed from them, then neither putrefaction of the blood nor the consequent inflammation and suppuration can take place. Also, experiments show that if these germs are prevented from reaching wound or abscess, their granulations and walls will not form pus, but only a little serum.

Now, as carbolic acid will completely destroy these organic floating germs, he filters the air before it reaches the wound, with dressings saturated with this agent. Respecting contused wounds, he says: "All the local inflammatory mischief and general febrile disturbance which follow severe injuries, are due

to the irritating and poisoning influence of decomposing blood or sloughs." To destroy any septic germs already in contact with the lesion, Lister first washes the wound thoroughly with a watery solution of carbolic acid, containing, for contused wounds, one part of crystallized carbolic acid to twenty of water, and one part to forty for simple incised wounds. To prevent the subsequent access of septic germs, he covers the wound with a lac plaster,* extending freely beyond the wound at every part, so that the discharge may have to travel a considerable distance beneath the impermeable antiseptic layer. The greatest care is necessary in changing the dressing, especially with contused wounds. Inasmuch as the antiseptic injected into the wound on the previous day has become absorbed, the extravasated blood, and any portion of tissue killed by the violence of the injury, are as susceptible of putrefaction as if no such treatment had been pursued.

Lister, counselling adherence to the minutest details of his plan, observes that "experience leads him to believe that if, when the dressings are removed, a single drop of serum were to be pressed out by the movement of the limb, and then regurgitate into the interior, after being exposed even for a second to the influence of septic air, putrefaction would be pretty certain to occur." In re-dressing a wound he recommends "the employment of a syringe, the muzzle of which is inserted beneath the margin of the lac plaster, and as this is raised a stream of watery solution of carbolic acid (one to forty) is made to play upon the wound, till a piece of calico, soaked with the same solution, has been placed upon it." Any examination of the wound that may be desired is made with freedom through the transparent solution thrown over it by the syringe. Lister changes the dressing on the day following the injury; but afterwards the frequency of the dressing must be regulated by the

* This plaster is composed of a mixture of three parts of shellac to one of crystallized carbolic acid. This mixture is incorporated with a soft cloth, instead of being spread upon starched calico. It is thus rendered beautifully flexible, and at the same time much more durable. As in this form it is very thin, it is important where much discharge is anticipated, or where a long time is intended to elapse between the dressings, to use it in two layers.

amount of discharge. After the first day or two, he protects the wound from contact with the carbolic plaster, to prevent irritation of the delicate structures and the formation of pus. He says: "After the first dressing, the object I always aim at is to have the material in contact with the exposed tissues approximate as closely as possible to the perfectly bland and neutral characters of the living healthy tissues." The material placed between the wound and the carbolic plaster he terms "the protective." "It is essential that the 'protective' should be antiseptic at the moment of its application; otherwise there will be a risk of its communicating septic germs." The protective he employs is made of oiled silk brushed over with a mixture of one part of dextrine, two parts of powdered starch, and sixteen parts of cold watery solution of carbolic acid (one to twenty). The carbolic solution is used rather than the water, though not for its antiseptic property, but because it makes the dextrine apply itself more readily to the oiled silk, and the granular starch is used for a similar purpose.

Oiled silk thus prepared becomes uniformly moistened when dipped in a watery solution of the acid, so that all risk of communicating putrefactive mischief along with it is avoided. The "protective" must be everywhere well overlapped by the antiseptic lac plaster.

This treatment, Lister says, prevents, in some instances, suppuration in the cavity; the old stimulus being removed, and the new one of decomposing matter prevented. With small abscesses this favourable termination is indeed the rule; and with large and even enormous abscesses—psoac and iliac—but little fresh matter is formed; and the patient is thus preserved from the exhausting effects of an abundant and prolonged discharge. The dressings must be continued till the wound has quite healed.

So much for the scientific rules of the antiseptic treatment of wounds; and I have quoted Lister pretty freely, to show that if his views could be strictly carried out, no doubt the results would be favourable and conspicuous. But time is of importance to the veterinary surgeon, as he has many miles to go over in the course of the day, and many patients to examine; and if he

had to conscientiously carry out the Professor's rules in the dressing of wounds, I fancy he would be puzzled to accomplish the day's duties. Carbolic acid is likewise objectionable for general use, owing to its characteristic odour, as it is so well known and so largely abused by ignorant and unqualified persons in meddlesome quackery, to save the expense of the veterinary surgeon. One striking instance of the abuse of carbolic acid I heard of in the North a few weeks since. A friend of mine, a veterinary surgeon, was called to a case where a horse was attacked with sore throat. The owner of the horse, having some knowledge that carbolic acid was used in veterinary practice, thought it a desirable agent to have rubbed into the skin covering this part. What were the consequences? The poor animal must have suffered excruciating pain, as the acid acted energetically on the skin, producing opaque white patches, and excited active inflammation, followed in a few days by desquamation. The toxic effects of carbolic acid are characteristically described in the *Veterinary Journal* for April by "Nemo"; and in the same Journal Mr. T. D. Broad, F.R.C.V.S., Bath, gives an elaborate history of the use and abuse of this much-vaunted application.

Now, what is the best and most effectual remedy to be employed in the treatment of gangrenous and sloughing wounds? There are many in use, and several of them are infinitely superior to carbolic acid. For instance, there is the solution of chloride of zinc—a popular remedy with some eminent veterinary surgeons. I remember my friend, Mr. Harry Olver, M.R.C.V.S., Tamworth, showing me a case some months since of gangrenous wounds in the legs of a horse, that he treated with the solution of chloride of zinc, and the case did remarkably well on it. Then there is the tincture of calendula—a favourite application with many for sloughing and suppurating wounds. And another, which has of late attracted much attention, is the "Linimentum Saponis *cum* Myrrh et Benzoin." I am indebted for the formula of this latter application to my friend Mr. John Peele, M.R.C.V.S., Durham, who drew my attention to it a few years since. I had it prepared from his formula, and it is obtainable from Messrs. C. J. Hewlett and Son, veterinary wholesale druggists, Cree-

church Lane. It can be applied with marvellous success to gangrenous and ill-smelling sores, as it prevents the stench, acts as a stimulant, and improves the condition of the wound. For simple bruises and cuts, mixed with water (equal parts), it forms a beautiful creamy application. It can be used with the greatest safety, and is not likely to be detected by ignorant and officious stablemen, who are always ready to try and find out any celebrated lotion or liniment. So popular has this application become, that it will be found in almost every veterinary surgeon's pharmacy between Penzance and Newcastle. My views regarding this excellent remedy will be fully corroborated by some eminent practitioners; and notably amongst them I would mention my friends Mr. H. W. Thomas, M.R.C.V.S., Plymouth; Thos. Olver, M.R.C.V.S., Truro; H. Olver, M.R.C.V.S., Tamworth; E. Faulkner, M.R.C.V.S., Manchester; H. Peele, M.R.C.V.S., West Hartlepool, and Messrs. Hubbick and Peele, Durham.

THE *ŒSTRUS EQUI* OR HORSE BOT.*

BY D. S. BROWN, V.S., MONTREAL.

THE genus *Œstrus equi* belongs to the family of *Œstridæ*, a division of the order *Diptera*, or two-winged insects. The species of the *Œstrus equi*, as described by Bracy Clark, are as follows:—

First: *Œstrus equi* (*Gasterophilus* of others).

The fly of this species has opaque white wings with a golden tinge, a transverse black wave, and two spots near the extremity, a minute raised dot near the base of the wing. The abdomen is reddish-brown, with black spots and points. The legs are red. The female has a lengthened abdomen, curving underneath; abdomen of male obtuse. Found in meadows, laying its eggs or "nits" on the knees, mane, and sides of horses. The egg is white, oblong, pointed at one extremity, the other obtusely truncated, with a lid. The *larva*, or "grub," is barrel-shaped,

* Paper read before the Montreal Veterinary Medical Association, February 22nd, 1877.

tapering at one end and obtuse at the other, and is covered with a thick skin, beset with a double row of prickles round each joint, alternately placed. It is found in the stomach of the horse, to which it adheres by two short black hooks, one on each side of the mouth.

The *pupa*, or chrysalis, is oval, dark-red, rough, with prickly points. In spring or early summer they may be found on the stable floors, under the dung in the manure pit, or in the pasture fields, where they are covered by the horsedung.

Second : *Œstrus hæmorrhoidalis* (the Lip or Anal Bot).

The wings of this fly are without spot, and are of a brown colour. The face is white, with antennæ inserted in black pits or depressions ; body thinly covered with hair ; thorax greyish in the middle ; abdomen black and shining, with base white and extremity orange-red ; legs pale-red. It is found in meadows, laying its eggs on the lips of the horse.

The eggs are black, oblong, and with a *petiolus* or foot-stalk. The larvæ are white, with prickles like the former, but less and rounder. They inhabit the stomach of the horse. The pupa is reddish-brown, with small prickles round each segment.

Third : *Œstrus veterinus* (the Red or Breast Bot). This species has transparent unspotted wings. Body oblong, tapering, and covered with reddish-yellow hairs. The sides of the thorax and base of abdomen are covered with white tufted hairs. It is found in meadows. The larvæ are coral-red, oblong, and smooth-jointed ; the last two joints are dark-red.

The Bot-fly considerably resembles the common honey-bee. The female has the abdomen lengthened, forming an ovipositor, which she carries curled in toward the feet. When depositing her eggs, she carries her body nearly vertical, suspends herself for a short time before the part on which she intends to deposit the egg ; then, with a sudden dart, she glues it to a hair. She does not seem to alight, so quickly is the egg deposited. She then again poises herself near the part, prepares another egg, and deposits it in the same manner.

The egg has the shape of an oat-kernel (Fig. 1, *a*, *b*, *c*). The side of the smaller extremity is attached to the hair by a strong and almost insoluble glue. The shell, seen under the microscope,

is transversely striated, yellow, and almost transparent. The free or unattached extremity, in the perfect egg, is covered by a lid, which, on the application of moisture and heat, readily

FIG 1.
The egg-case of the *Œstrus equi* attached to the hair: natural size.

falls off. This moisture and heat is usually supplied by the animal's tongue, in licking or biting himself. The larva is

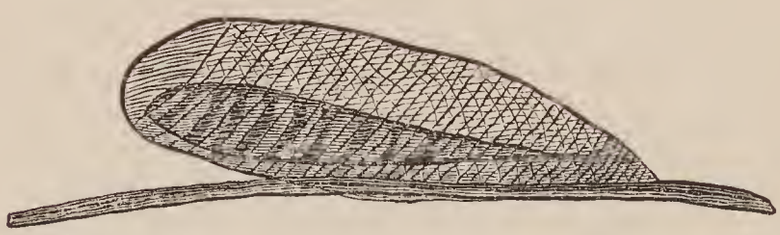

FIG. 2.
Full egg of the *Œstrus equi*, enclosing pupa, the opercula being still *in situ*.

thus freed and at the same time roused; and in working itself out of the shell it comes in contact with the tongue or lips of

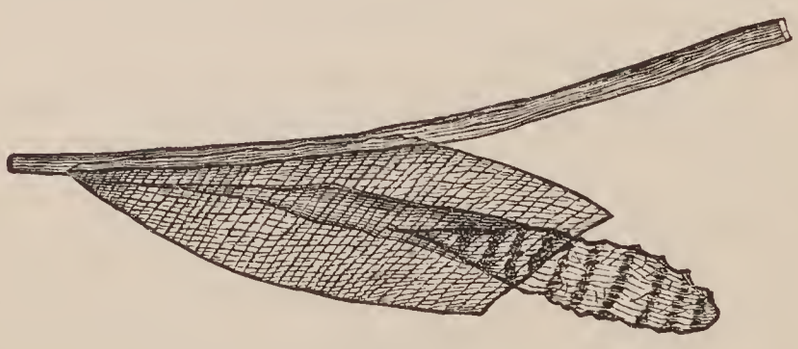

FIG. 3.
Larva of the *Œstrus equi* half extruded from the egg-case.

the horse, to which it adheres, and is thence conveyed with the food into the stomach.

Our president, Mr. McEachran, has in his collection a micro-

scopical preparation, in which some eggs of the *Œstrus equi* and their contents are beautifully shown. One of the eggs is entire. Another has its lid removed, but the minute larva is still contained within it (Fig. 2). Another shows the creature half out of the shell (Fig. 3); while another exhibits the empty shell (Fig. 4).

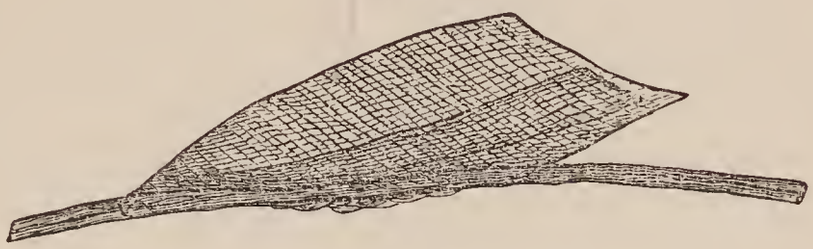

FIG. 4.
Empty shell or case of the *Œstrus equi*, with opercula removed.

The eggs of the *Œstrus hæmorrhoidalis*, besides having the petiolus or foot-stalk, is said to be black-coloured, which distinguishes it from the preceding.

The larva of the *Œstrus equi* is of a light coral colour, and is beset with a double row of spines between each two segments. The spines are fewer on the larvæ of the *hæmorrhoidalis*, and are said to be wanting on the *veterinus*.

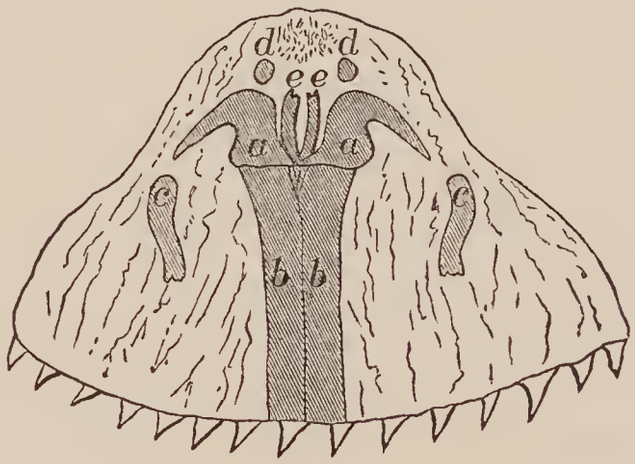

FIG. 5.
Head of the *Œstrus equi*: *a a*, hooklets; *b b*, œsophageal tubes; *c c*, inferior spiracles *d d*, anterior spiracles; *e e*, mandibles.

The smaller extremity of the grub is the head, which is furnished with two sharp hooklets (Fig. 5, *a a*), by means of which the bot adheres to the stomach. When these hooks are inserted, the bot is suspended without further exertion, as by two ordinary hooks, being itself attached to the handles.

It has been supposed that the bot has no power of relaxing its hold, when once attached, until fully matured. But that they have this power, Mr. Lyford and myself have fully proved—at least, to our own satisfaction. We repeatedly allowed them to attach themselves to our fingers, and in several instances they withdrew their hooks by their own effort, and of their own free will. Again, I noticed one attached to the cork of a bottle, in which I had several confined. The hooks, I noticed particularly, were fully inserted ; yet, when I looked again, the bot was free. On the table, also, we observed them crawling for a short distance, becoming firmly attached to the cloth, and after a little time loosening their grasp and again moving on. We caused one to let go its hold in my hand by touching it with iodine. Another immediately freed itself on being held over the lamp. The last experiment did not kill the creature, for it again attached itself to my finger.

Between these two hooks is the mouth, furnished with minute mandibles, opening vertically. These larvæ have a definite digestive canal. This consists of an œsophagus, what appears to be a stomach, a distinct coil of intestines, and a rectum. I was, however, unable to find an anal opening, the rectum apparently terminating inside the lower margin of the end-plate.

The respiratory apparatus consists of a large number of bronchial tubes, all of which have their origin in a sort of air-box, just inside the scaly end-plate at the posterior extremity. The small tubes break up into minute ramifications in the red substance of the thick part of the body.

The two principal tubes extend the whole length of the bot, giving off numerous anastomosing branches, and terminating anteriorly, each in a spiracle, which seems to communicate with the exterior by a minute opening.

These larvæ have also a definite circulatory system, and a pulsating movement can be plainly seen on the superior part of the posterior extremity, just under the skin.

The life-history I take the liberty to give from Bracy Clark's essay:—"When the female has been impregnated, and the eggs sufficiently matured, she seeks among the horses a subject for her purpose, and approaching him on the wing, she carries her

body nearly upright in the air, and her tail, which is lengthened for the purpose, curved inward and upward: in this way she approaches the part where she designs to deposit the egg; and suspending herself for a few seconds before it, suddenly darts upon it, and leaves the egg adhering to a hair. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and poising before the part, deposits it in the same way. This is repeated by these flies till four or five hundred eggs are sometimes placed on one horse.

"The inside of the knee is the part on which these flies are most fond of depositing their eggs; next to this the sides and back part of the shoulder; and less frequently on the extreme ends of the hairs of the mane. But it is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked with the tongue; and the ova, therefore, are always scrupulously within its reach.

"The eggs thus deposited I at first supposed were loosened from the hairs by the moisture of the tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched: but on more minute search I do not find this to be the case; or at least it is only by accident, for when they have remained on the hairs four or five days, they become ripe, after which time the slightest application of warmth and moisture is sufficient to bring forth in an instant the latent larva. At this time, if the tongue of the horse touches the egg, its operculum is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is thence conveyed with the food to the stomach. Here, as its growth advances, it becomes thicker and broader, and beset with bristles. They are very frequent in horses that have been at grass, and are in general found adhering to the white insensible tissue or coat of the stomach. They usually hang in dense clusters on this white cuticular lining of the stomach, and maintain their hold by means of two dark-brown hooks, between which a longitudinal slit or fissure is seen, which is the mouth of the larva. By its hooks the bot can remain firmly fixed for any

length of time, as at anchor, without requiring any further exertion.

"These bots, as is also the case with two or three other species, pass the autumn, winter, and spring months in the stomach, and arrive about the commencement or middle of the summer at their full growth, requiring a twelvemonth fully to complete their structure."

On the *Œstrus hæmorrhoidalis*, or Anal Bot, he says:—"The part chosen by this insect on which to lay its eggs is the lips of the horse, which is very distressing to the animal from the excessive titillation it occasions. The horse endeavours to avoid it by galloping away to a distant part of the field; and if the fly still continues to follow and tease him, his last resource is the water, where the œstrus is never observed to pursue him.

"When several of the flies are confined in a close place, they

FIG. 6.
Mature Bot, about the natural size.

have a particularly strong, musty smell; and I have observed both sheep and horses, when teased by them, to look into the grass and smell it very anxiously; and if by these means they discover the fly, they immediately turn aside and hasten to a distant part of the field.

"The eggs of this species are difficult to be seen on the horse's skin or beard, owing to the agitation of the beast, and from the colour of the egg being dark, like that of the skin of the horse. I ascertained, however, its form by pressing one of these eggs from the abdomen.

"The larva or grub of this species inhabits the stomach, like the former, generally adhering to the white lining, and is disposed promiscuously in dense clusters, in the same manner. They may, however, be distinguished from them by being in general smaller and longer in proportion to their bulk. The

larva of this species may be obtained from almost any horse that has been much at grass during the preceding year, and exposed to these flies, and will be found during the summer months sticking more or less within the verge or opening of the anus, adhering to its soft lining, and producing considerable irritation and uneasiness."

Professor Gamgee thinks that this adhering to the rectum and anus is habitual with all species, and he says that "the adhering to the anus would seem to be a natural and habitual act, destined to allow time for development of the faculty to creep. The larva in this position possesses little power of movement, and has a tough shell-like appearance. But exposure to the atmosphere seems very soon to excite it to move. It is, however, endowed with active locomotive power for only a short time—probably only for the day of its exit, so as to afford it means to attain a secure hiding-place in a bank or other favourable retreat. I have often seen the grub on the floor of a stable, moving towards the side so rapidly, and in such an outstretched manner, that at first sight it could not be recognised.

"The bot," he continues, "is next found in the form of a chrysalis, the skin becoming shell-like, and retaining the shape and form of the grub as it issues from the horse's intestine, only acquiring a reddish-brown colour. The further metamorphosis in the state of the chrysalis is completed by the eighteenth or nineteenth day. The fly escapes from the narrow end representing the head of the bot, and invariably issues—fully formed and powerful on its wings and legs, and covered with down—at an early hour in the morning, varying with the time the sun rises, from three to five a.m.

"My plan for observing these points," he says, "was to inclose the larvæ, as I removed them from the anus, in thin glass jars covered with gauze; and I have always seen the fly born on the eighteenth or nineteenth day. The activity of the bots in my spontaneous *vivarium* was very great, and with a buzzing noise they moved about and then rested, and were especially vigorous and loud in their buzz as the day advanced. In a state of nature, this is a provision to ensure the approximation of the sexes and fecundation of the ova."

When the ova are fecundated the round of existence is completed.

As to the effects of these parasites on the animal economy, great diversity of opinion still exists. Many have supposed them to be rather beneficial than otherwise, and among these is Bracy Clark. Some have gone even so far as to assert that they are really useful, as they help to triturate the food in the stomach, and thus aid digestion. Others, among whom is Dr. Dadd, assert that under ordinary circumstances they are neither useful nor injurious; while others consider them to be injurious at all times, and that the extent of their influence is in proportion to their number and location. Among those who hold the latter opinion are Professors Williams, Gamgee, and Mayhew.

Some claim that these parasites are injurious only when occurring in such large quantities as to obstruct the passage of aliment.

Professor Law says that when they are situated on the cuticular part of the stomach they do no harm, except that when in the cardiac orifice they obstruct the passage of food, and when in the throat they cause chronic sore throat, which continues until the following spring, unless the bots be removed. "And above all," he says, "when very numerous, and attached to the highly sensitive right half of the stomach, or the duodenum, they seriously interfere with digestion, causing the animal to thrive badly, to be weak and be easily sweated or fatigued, and even determining sudden and fatal indigestion." He also says that they are very injurious when, in passing along the alimentary canal, they become attached in their course.

My own opinion is that these parasites cause more derangement in the animal economy than most professional men seem willing to admit; yet, perhaps, not so much as they who would refer everything to them suppose.

It seems that they can hardly be otherwise than injurious when present in such numbers as we so often find them. And when occurring in fewer numbers, they must be injurious, from their very mode of attachment. If we allow one to attach itself to the palm of the hand, the irritation will be found consider-

able; and can we say the horse's stomach is less susceptible to the same irritation?

I have assisted in the examination of at least a dozen stomachs during the present school-session, and many of them for the sole purpose of noticing these parasites. In all but one of these stomachs the bots were found, and in all but two there were two patches—one on the cuticular part of the stomach, the other in the duodenum, just outside the pylorus. In one case they were scattered promiscuously.

Some argue from the very general occurrence of the bots that they must be useful rather than injurious. These might as well argue that, from the tape-worm being so universally present among Abyssinians and Icelanders, these parasites are useful.

It is generally taught that the bots have no mandibles with which they can gnaw. But if not, the hard plates on each side the mouth, and already referred to, are very deceptive. If they have no means by which they can dig or bore, how is it that they are so often found in deep pits in the walls of the stomach?

Those of you who assisted in the *post-mortem* examination of the horse taken to the mountain park early in the session, will doubtless remember the appearance of the stomach. In it the usual two clusters were found, and in each quite a number were discovered more than half imbedded in the stomach or duodenal walls, and in pits which they themselves must have excavated; for they were so thickly covered with mucus that they could not have been the result of *post-mortem* digestion. Besides, there were no signs of *post-mortem* digestion elsewhere in the stomach.

So, from this and other similar observations, I am inclined to believe the statement of men who "have seen the heads of the bots sticking through the stomach walls."

I think, however, that it is seldom that these larvæ undertake this mode of progression—or at least to such an extent—while their host is alive and healthy.

Further, I believe that in many debilitating diseases, where the natural functions of the stomach are impaired, these parasites, by becoming uneasy and moving their free extremities, boring deeper into the stomach walls, or loosening their hold

and re-attaching themselves, thus become severe irritants, and prove serious hindrances to the successful treatment of many of our patients, even if they are not primarily the cause of many fatal diseases.

Symptoms.—The symptoms are not usually distinct from other forms of indigestion, or those caused by other entozoa. The previous history of the case must be thoroughly inquired into, and well considered: this, in fact, being nearly the only means we have of judging of the presence of bots. If the animal has during the previous bot-fly season had a run at grass, and has symptoms of serious indigestion, with occasional nausea, or a depraved appetite, I think it safe to call it "bots," especially if we do not know what else to call it.

Treatment.—The best treatment is undoubtedly prevention. If the animal is having a run at grass during the bot-fly season, the "nits" should be removed from his hair at farthest every second day. But in case of a large number of colts, of course this would not be practicable.

Professor Law thinks it highly probable that vermifuges, such as Male Shield Fern, followed in the usual manner by a brisk cathartic, if given as soon as the bot-fly season is over, and before the larvæ have attained their thick skin, may effectually remove them.

Mr. Lyford, our fellow-student, in experimenting on a horse at the college here, with carbolic acid, under the direction of Professor McEachran, commenced by giving two-drachm doses in bolus of linseed meal three times the first day. The doses were doubled the second day; and on the third he gave four ounces of the glacial acid. The horse was not noticeably disturbed. The animal being killed for dissection on the third night, the stomach was examined and found but slightly affected by the acid. It was observed, however, that most of the bots—and there was a large quantity of them present—were loose, and some of them had passed as far as the posterior part of the jejunum.

Probably if a brisk cathartic had been administered, large numbers of them would have been expelled.

The experiment is at least well worth completion.

"BURSAUTTEE."

BY "UBIQUE."

THE remarks by "Max" in the November number of the *Veterinary Journal*, and those by Mr. Knott in that for March, have induced me to endeavour to give my own impressions with regard to this malady.

The question is asked almost every day, "What is Bursauttee?" and just as frequently the same answer is given: "We don't know." We know how the disease shows itself: viz., by ulcers with indurated margins, which attack various parts of the body —such as the angles of the mouth, abdomen, joints, penis, etc.; and we know, to a certain extent, the best measures to take with a view to effecting a cure; but with respect to what the cause of the affection is, or in what way it is produced, I do not think we are acquainted. I cannot, from my own experience, go so far as to say that this disease is caused by an over-abundance of acid in the blood, or that it is analogous to Syphilis or Scrofula; but I hold the opinion that it is a blood disease peculiar to the hot season, and of such a nature that it renders the skin, and mucous membrane where it most approaches to the nature of skin, unduly disposed to chancrous ulceration; and that a slight wound or abrasion is a sufficient exciting cause, in some instances, to produce it. It must not, however, be supposed that it is absolutely necessary to have a wound or abrasion—the disease being frequently papular in its origin. Nor must it be supposed that it is peculiar to the rainy season alone. At the present time (30th April), there are in my infirmary three cases of chancrous ulcers, between which and those of the rains no external difference can be distinguished. I have always looked upon "Bursauttee" as essentially an affection of the hot season—that is, including the rains.

Dr. Fayrer's explanation of "Delhi Boil" appears to me the most rational one that has yet been given of "Bursauttee"; and I think his theory of abnormal cell-growths, with subsequent degeneration, the most probably correct one yet advanced.*

* See the *Veterinary Journal* for November, 1876, p. 362.

The symptoms by which this disease may be known have been so well described in other papers on the same subject, that I need not enter into them. It may, however, be as well to mention a difference between the ulcers on the penis and those affecting other parts. Those on the fetlocks and other joints generally assume the character of chancres with indurated margins, discharging a thin sanious fluid, and causing little or no surrounding swelling; but those on the prepuce and *glans penis* frequently have a tendency to run into one another, and produce enormous tumefaction of the parts adjacent by infiltration into the cellular tissue. I have now under treatment one of these cases, in which the prepuce and *glans penis* were attacked, about a month ago, by small spreading ulcers--papular in their origin, and which rapidly coalesced and caused the glans to have an appearance like one large ulcer. This case is now rapidly improving, but the whole of the parts are greatly thickened.

No hard-and-fast line of treatment can be laid down for this affection. For my own part, I employ several remedies; when one becomes inert I adopt another, and so on. But one method has lately been attended with considerable success, and this is simply the administration of iodide of potassium until the system becomes completely under its influence. Arsenic is a good internal remedy in slight cases; but the Potass. Iod. in small doses every day, with green food and occasional aperients, combined with the use of the iodide of iron externally, is, in my opinion, the best system of treatment in severe cases. After the ulcers are healed, a mild iodine ointment will generally remove any induration that may remain. Slight cases may be treated by carbonate of magnesia and powdered charcoal externally, with arsenic internally, and a diet of green food. McDougall's disinfecting powder is very useful as a dressing, and sprinkled about the stable is invaluable for keeping away flies.

I quite join with "Max" in decrying the barbarous remedies adopted by some amateurs in treating this affection. Nothing is more revolting than to hear these matters spoken about as if a horse were so much wood, to be operated on with knife and firing-iron; and it rests in a great measure with professional

men to put an end to such pernicious twaddle, by showing that the disease is amenable to mild remedies judiciously applied.

That we have yet a very great deal to learn regarding "Bursauttee," no one will deny; and the man who discovers its true nature and the means to prevent it will confer a lasting benefit on horse-owners and others in India. For, without exception, this abominable pest is the greatest nuisance, both to horses and their masters, that could possibly be. Change of climate has been recommended, both as a curative and a preventive measure; but it is not always possible to try it—that is, if one wishes the affected horse to remain one's own property—as it requires what most of us would like to have (viz., a long purse); but unless some very cool place were selected, I doubt whether good results would ensue, as the disease is known throughout the plains of India, and hill stations are not suitable for horses in large numbers.

PUNCTURE OF THE INTESTINE IN FLATULENT COLIC.

BY J. C. BERNE, M.R.C.V.S., ROYAL ARTILLERY, MADRAS.

I WAS very much interested in the paper of Mr. Harthill, V.S., Louisville, Kentucky, under the above heading, which appeared in the March number of the *Veterinary Journal.*

It affords me now much pleasure to give you the particulars of a case of Tympanitis, which I have had lately under treatment, and the successful termination of which I ascribe to the operation in question.

On the 18th of April, at about 2 p.m., a case, described by the farrier as Colic, was admitted to the sick lines. The usual treatment in those cases was carried out by him; but as no improvement was manifested after the lapse of nearly three hours, I was sent for. The patient was a dark chesnut "Waler" gelding, five years old, in rather low condition. His symptoms were: pulse 80; mucous membranes very much congested, approaching to a purple tinge; temperature, as far as I could make out without the aid of a thermometer, normal; pupils un-

affected; great uneasiness—walking round the box; when at rest looking round at both flanks, and standing in a semi-crouching position, the off hind-leg being partly drawn under him; eversion of upper lip from time to time; tympanitis well marked in both flanks, but the right iliac region was the more prominent, and a clear resonance followed percussion on either side. The rectum was cleaned out, and a pint and a half of urine, or thereabouts, drawn off by cathether. A dose of physic in solution was given, and turpentine enemas were thrown up at intervals. At 8 p.m. no improvement; received Tinct. Opii. ʒij. in water Oiss.; stimulating liniment well rubbed into abdomen, and the turpentine enemas ordered to be continued.

19th. No change. Received Ammon. Carb. ʒiss. in bolus; clysters as before. 5 p.m. Patient *vomiting*. Determined on puncturing the intestine as the only chance of saving the horse's life. Twitch put on, and strapped up near fore-leg. The point I selected for the puncture was three inches and a half to the antero-inferior part of the anterior spine of ilium, off side. The reason for my selecting this particular place was because of its greater prominence.

Of course the distension of the intestines altered their relative normal positions, but in this instance it was the cæcum that the trocar entered. All, then, being ready, I cut the hair closely from the part, and divided the integument with rowelling scissors; so that little force was required to drive the trocar and cannula into the distended viscus.* The trocar being withdrawn, the imprisoned gas rushed out with a sort of hiss, through the narrow tube of the cannula. Quickly the abdomen was restored to its normal dimensions, and the cannula withdrawn. It is said that to be relieved from pain is the happiest sensation an animal can feel; and the sigh of relief which my patient gave as the offending gas was expelled was indeed highly suggestive.

A wet cloth was placed over the loins, and a bucket of water, having Pot. Nit. ʒij. dissolved, left with him for the night, with orders to give more if he required it.

* The dimensions of the trocar and cannula used were—trocar 2½ inches long, cannula 2 inches long. Diameter of latter, $\frac{5}{12}$ths of an inch.

20th. During the night vomited twice; no desire to eat, but drinks a good deal; mucous membranes still congested; pulse 72; continue nitrate of potash solution. 5 p.m. Thirst rather increased; mucous membranes less congested than at my morning visit; dunged during the day—fæces soft. The excessive thirst I looked upon as unfavourable: ordered Tinct. Opii. ℥ij. in water Oiss., and to have a bucket of linseed "congee" placed in his box.

21st. Bowels acted freely during the night—dung soft; inclined to eat; thirst less; pulse 64; continued linseed congee. 7 a.m. Received Tinct. Opii. ℥ij. in water, as before.

22nd. Greatly improved. Mucous membranes natural; pulse 52; bowels and kidneys acting satisfactorily; wound on flank nearly healed. It will not, however, have been by the first intention, as I noticed this morning a drop of pus between its lips. Touched wound with Cupri. Sulph.; solution of Pot. Nit. as before, and let him have as much grain and linseed congee as he cares for.

23rd. Appetite good; bowels and kidneys acting naturally and well; pulse 48. Same treatment as before, with the addition of an hour's exercise morning and evening.

The diary of the case continued thus satisfactory to the 26th, when he was discharged cured. Indeed, he might have been sent out of the hospital stables some days earlier, for he was in full health and spirits on the 23rd; but the small wound on the flank was rather tardy in healing, and I was unwilling to discharge him till the process was complete.

From the passive way in which this horse stood during the operation of dividing the skin and puncturing the intestine, I believe now the use of the twitch and fetlock strap to have been unnecessary. At the same time, I think in all cases of this sort it would be as well to put them in requisition.

With reference to this case, I may observe that from first to last there was no return of the abdominal swelling, and, with the exception of the great thirst on the day succeeding the operation, its progress, from the time of puncturing to the discharge of the patient, was very satisfactory. I confess I looked on the great thirst with a certain amount of alarm, regarding the

symptom as foreshadowing Peritonitis; hence the exhibition of the Tinct. Opii. But whether it was that my fears were groundless, or that the medicine warded off the anticipated danger, I am happy to say the course and ending of the case realized my most sanguine wishes. Humanly speaking, I can state confidently that this horse's life was saved by the operation.

Cases of Flatulent Colic, I am glad to say, are not of frequent occurrence in my practice; but when I meet with another, presenting symptoms like the one under notice, I shall have no hesitation in pursuing the same line of treatment as was adopted in this instance. Remembering the little encouragement—we need not stop to ask the reasons—that this operation has met with in our professional literature, it will, I presume, be admitted that Mr. Harthill deserves our congratulations, not alone for the *acumen* which distinguished the management of his cases, but also for his professional *esprit* in allowing us to have the results.

VETERINARY OBSTETRICY.

BY W. A. COX, M.R.C.V.S., ARDWICK, MANCHESTER.

(*Continued from* vol. iv., p. 181.)

Obstruction of the Os Uteri by increased and morbid secretion.—This is not frequent, and is found in all animals. A cow belonging to Mr. T. Sides Mill was presenting parturient pains; examination showed the cervix completely blocked by a tenacious substance of considerable bulk. It was removed in pieces, some as large as the hand; and showed its elasticity by being drawn into strings many inches in length. When thrown on the floor it was with difficulty removed. This animal had exhibited gradually increasing pains for sixteen or eighteen hours, without any progress being made. Several hours after the removal of this substance, the *os* was sufficiently dilated to allow the hand to be passed, when the calf, felt through the membranes, was found in position. In the course of eight hours she calved without assistance. The adhesive power of the secretion was so great that I am convinced that delivery would not have been accomplished without its removal.

Another, and somewhat peculiar case occurred, that will be as well to mention, as I had at the time two pupils, who had been with me a considerable period, and were well experienced in most obstetric cases, and both were mistaken in their diagnoses. Mr. H. Y——, of North Brailsford, sent, during my absence as evidence on a horse case, requesting attendance on a heifer that "pained" herself as if to calve, but without any external appearance. My pupils visited her, and reported to me on my return that it was a case of Gravid Uterus or Abscess, and that she was not pregnant, although the owner averred she had been served, and he had not afterwards observed any œstral period. They had recommended him to have her slaughtered. Being in the neighbourhood a few days afterwards, I called, and found that the uterus, with fœtus *in situ*, had been kept for my inspection. It was of considerable volume, and had been laid open by a single incision which extended through the fœtal membranes. The walls of the uterus were thickened by an effusion of fluid between the coats, as it were, of the fœtal membranes; and between them was a large bulk of semi-organized fluid, the *liquor amnii* especially being greatly increased, five or six inches in depth, and having the appearance of yellow jelly. The fœtus was perfectly formed, but very small, and lay in the centre of this morbid mass; the bulk of matter surrounding it had quite prevented any detection of its presence. Had the fœtal membranes been ruptured and the mass removed, the diseased condition of the uterus would have precluded recovery.

I read in Mr. Gray's paper (*Veterinary Journal*, vol. iv., p. 253) that he finds it difficult to incise the fœtal abdomen in cases of Ascites. This does not occur with me; but I make it further back than he states, finding no difficulty in getting far enough; and the *curved* knife is much superior to the straight one, as it penetrates much easier, and is passed through the vagina with less risk. I have tried the trocar and cannula, passing it as he suggests; and from some cause, probably the pressure of some of the abdominal viscera against the orifices, I never found it to work successfully, and have consequently ceased to use it.

(*To be continued.*)

OBSCURE CASES OF SCROFULA IN CALVES.

BY JOHN W. HILL, M.R.C.V.S., WOLVERHAMPTON.

ON the 10th of July, 1875, I was requested to visit a pedigree heifer calf, six months old, the property of A. C. Twentyman, Esq., of Castlecroft, which was described to me as making a peculiar roaring noise in its breathing. This I found it unmistakably did, the sound being a facsimile of that emitted by a horse affected by roaring when going up hill; but it was equally loud whether the animal was stationary or moving. The nostrils were dilated and the cheeks blown out in respiration. The throat on either side was enlarged, and sensitive to pressure. Auscultation revealed no chest affection; and indeed it was palpable to an ordinary observer that the malady was purely local and confined to the region of the throat. I considered it a case of Acute Laryngitis, and ordered the patient to be placed under cover, hot fomentations to the throat, and a saline aperient.

On the 12th its companion, another pedigree beast of the same age, purchased at the same time and from the same place, was observed to be similarly affected.

On the following day I visited them both; the former was no better, and the latter was equally bad. Both were kept under cover, and I dressed the throat of each with Hyd. Biniod. ointment 1 to 8, ordered sloppy, nourishing diet, and prescribed tonics, chiefly iron. For three weeks they neither of them made any progress: on the contrary, the noise in breathing continued and increased in sound, *but without any cough.* (This somewhat puzzled me, as it was evident the pressure on the larynx was very great.) They had become considerably emaciated, and cared little for food. In a few days they were turned out again to grass.

On the 9th August I called to inquire after them, when I observed they were both discharging profusely from the nostrils, but no abnormal sound was present. I was informed by the bailiff that the discharge had suddenly commenced, and that with it the noise had as suddenly ceased. In short, abcess had

formed and broken, and was being evacuated through the nostrils. The discharge continued for nine or ten days, at the end of which time they were not further troubled about.

The former, however, remained until the last seven or eight months of its life a puny, miserable-looking beast, while the latter grew and thrived amazingly.

Now for the sequel. On the 7th of May last, I received a note requesting me to call and make a *post-mortem* examination of the first-mentioned patient, which the bailiff had found that morning dead. On opening the body, the sight presented to view of scrofulous deposit was simply extraordinary, for, as the butchers would express it, "the beast was 'graped' from end to end."

Both lungs were adherent to the walls of the chest, and literally covered with tubercle. A similar deposit was also observable within their structure, but exceedingly limited (hence the non-detection of thoracic disturbance during the throat ailment). The heart and its sac were similarly affected, the latter being extensively thickened, and covered with scrofulous deposit hanging in clusters (grapy). The spleen was loaded with it, and rotten; the mesenteric glands were also extensively diseased.

The deposit in every part was of a like nature—cheesy and gritty.

I thought this would be a good opportunity for examining the throat as to the illness of 1875. The skin on that part was therefore removed, and the enlarged condition of the parotid glands at once led me to suspect the seat and nature, from the condition of the other organs, of the disease. These glands were dissected away; and on making a section, the resistance offered to the knife was of a gritty or gravelly nature, and exceedingly hard. On dividing them, the same scrofulous deposit was found to exist,—and to such an extent in the left one that scarcely a particle of the original texture was apparent. Here, then, lay the secret of the supposed Laryngeal Inflammation. A scrofulous diathesis: not improbably due to the animal's high blood, and possibly a near relationship, if not hereditary.

The most singular part of the case is, that during the latter seven or eight months of its life the animal suddenly commenced

to thrive, and no cough or indisposition * was ever observed from that time to the date of her death.

To-day, the 7th of June, I have examined the fellow beast. I find a little parotid enlargement on the left side of the throat, and dulness over the lower part of the left lung, with general increased respiratory murmur on the right side. Otherwise she looks well, feels well, and is a fine beast. She is now near her calving, but Mr. Twentyman has wisely decided not to rear the calf, or to again breed from her.

I have one other little circumstance of interest to mention. From the deposit in the parotid gland of the first one, I inoculated in the forearm and thigh a kitten. An enlargement the size of a pigeon's egg has formed on the arm, and discharges a thin ichorous matter; the creature has become extremely emaciated, but so far feeds well. He refuses, however, to play with his companions, is continually sleeping, and the breathing is short.

* * * * *

On the 15th inst. I destroyed the kitten, and found the following conditions on making a *post-mortem* examination. In both lungs tubercle was thickly deposited. The liver was studded with it here and there. The spleen was loaded with it in the form of shot-like eminences externally. The mesenteric glands were enlarged and inflamed.

Three medical men of this town, and Dr. Burdon Sanderson of London, have inspected the body.

It may be observed that, as I am told, perhaps the kitten had tubercle previous to the inoculation; but of this I am convinced to the contrary, as I selected the strongest and healthiest of the litter, and without the slightest sign of disease.

Again, it may be said that the same condition would result from any blood-poisoning. Not so; for here we have an identical reproduction of the heifer's malady—to wit, Scrofula, —and in a marvellously short period, being only five weeks between inoculation and death, when, to judge from appear-

* She at times went alternately stiff in her limbs—due, no doubt, to the affection being located in the joints, and giving a semblance of Rheumatism.

ances, the deposit had been present in the parts for some time. Opportunity permitting, I intend carrying the experiment a stage or two further.

[The inoculability of Tuberculosis has been so frequently demonstrated, that there can now be no doubt whatever as to the fact of this disease being so transmitted, even to carnivorous animals. Viseur, of Arras, and others, have even gone beyond this, and produced the malady in healthy animals—cats, etc.—by feeding them with tuberculous matter.—Ed. *V. J.*]

THE TRANSVERSE POSITION OF THE FŒTUS DURING PARTURITION.

BY T. HOPKIN, M.R.C.V.S., MANCHESTER.

After reading the editorial remarks in the *Veterinary Journal* for June on the subject of "Transverse Presentations," appended to Mr. MacGillivray's communication, and the statement that Professor Goubaux was still in doubt as to their occurrence, because not as yet seen, I take the liberty of offering a few particulars of a case of this kind that I think admits of no doubt.

On May 13th, 1875, at five a.m., there was brought to my establishment a mare supposed to be suffering from Colic. She was in foal, but her time was not expired by some three or four weeks. I soon discovered that she was not affected with Colic, but was suffering from the slow peculiar pains that generally occur when the fœtus is not right. After some time she lay down, and unmistakably strained. Upon examining her *per vaginam*, I found the *os uteri* to be moderately dilated, but the genital canal was dry and harsh. The placental membranes being ruptured, a little fluid escaped, and then I assured myself that I had a transverse presentation to deal with—my hand coming in contact with nothing but the ribs of the fœtus. A careful exploration being made, the young creature was evidently fixed in the position delineated in Fleming's "Text Book of Veterinary Obstetrics." It was lying on its back, with the legs

flexed on the abdomen—the anterior limbs being towards the left flank of the mare, and the posterior towards the right flank; the tip of the tail, between the stifles and resting on the belly near the umbilicus, assisted me to ascertain the real position as much as anything, though the case was a puzzling one.

As to the way in which I eventually contrived to turn, and finally remove the foal, I need not here mention; neither is this necessary in order to prove that *we can have* transverse presentations "dans les grands femelles," etc. I may state, however, that the manipulations and manœuvres which had to be resorted to before delivery could be effected, quite supported the opinion I had formed as to the kind of mal-position I had to deal with.

Unfortunately, during the operation of extraction, the labour pains were so severe that the mare fractured the *os innominata* on the right side—the crack being heard quite distinctly,—and when she was got on her legs again after the removal of the foal, our apprehensions as to the nature of the accident were discovered to be only too well-founded.

I may add that the head of the foal was bent round to the left shoulder. I was very busy at the time, and neglected making careful detailed notes of the case, but merely kept a record of its main features.

RUPTURE OF THE ABDOMINAL MUSCLES DURING PREGNANCY.

BY J. B. MARTIN, M.R.C.V.S., ROCHESTER.

A VERY interesting case of rupture of the abdominal muscles during pregnancy has recently occurred in my practice; and as I have reason to believe that the accident is very rare—at any rate, it is the first of the kind that has occurred in my experience—perhaps a brief reference to it may be worth a place in the *Veterinary Journal.*

I was hurriedly sent for to attend a bay cart-mare, eleven years old, and in foal. When I arrived I found her "waddling" about in a meadow, with the abdomen nearly touching the ground,

and the mammæ or teats discernible low down, and more in the middle of the belly than towards the inguinal region. The mare could scarcely walk, but did not exhibit any indications of pain,—although the abdomen was so sore that she evinced much uneasiness when it was touched.

On examining the animal *per rectum*, the fœtus could not be felt; it had sunk completely out of reach. On exploration *per vaginam*, no signs of foaling were discovered, and the *os uteri* was quite closed. The mare presented a very peculiar appearance,—the great pendulous abdominal mass nearly touching the ground, and the flanks on each side hollow and almost in contact.

I diagnosed the case as one of ruptured abdominal muscles, with Hernia of the gravid uterus, and probably also of a portion of the abdominal viscera.

The prognosis was so serious that I hinted at the advisability of having the mare destroyed; but the owner determined to give her a chance, so we decided to wait patiently until the time arrived for foaling, before attempting to assist her. In order to relieve her of the immense weight and inconvenience of the pendulous mass, she was placed in slings. These prevented the foal dropping lower. A dose of physic was administered, and instructions given to watch the mare closely, and inform me when she began to foal.

In two days a message came that the mare was down and straining very severely. I attended as soon as possible, and found her straining as stated, and exhibiting symptoms of great pain. On vaginal examination, the foal's feet could just be felt; but the head was bent down between the fore-legs, and only the top of the neck could be reached. The feet were with much difficulty secured by means of cords, and partially extracted, but the position of the head prevented further progress. After some time, and with great labour, hooks were placed in the orbits, but when pulled at they gave way, as the foal had evidently been dead for some time, and was somewhat decomposed. The hooks, however, were retained in the flesh. The feet were pushed back, with a view to endeavour to bring the head into a proper position, but without success,—and during

the manipulations the mare made a few violent struggles and expired in great agony. With great exertion we extracted the foal, which was a very large one. A *post-mortem* examination was made, when it was found, as anticipated, that the abdominal muscles had all given way. What with the age of the mare and the weight of the foal, the muscles could not stand the strain; they consequently ruptured and allowed the gravid uterus to pass through. So that it would have been quite impossible for the animal to have foaled without assistance; and even if she had lived she could not have been of any possible use.

[Might not gastro-hysterotomy have been attempted in this desperate case?—Ed. *V. J.*]

THE ROYAL COLLEGE OF VETERINARY SURGEONS.

From the proceedings of the Royal College, which appear in another part of the *Journal*, it will be seen that Sir Frederick Fitzwygram has been re-elected President for the ensuing year—being the third consecutive year in which he has held that office; and we feel certain that the profession will heartily applaud the action of the Council in the very unusual course it has adopted, of again electing a President who has already occupied the chair for two succeeding years. The circumstances have undoubtedly warranted the Council in taking this exceptional step,—for it has perhaps never before happened in our history that the presidential chair has been so well and so worthily occupied; and the great and important measures which have been inaugurated and carried so far into successful operation, since Sir Frederick honoured us by assuming the Presidency, yet require watching and consolidation. The labours begun and conducted with so much earnestness and vigour have yet to be brought to a fitting termination; and no one could so satisfactorily accomplish this as Sir Frederick, whose business qualifications, judgment, influence, impartiality, and energy, render him peculiarly competent for the task. For the first time since the profession was incorporated, the whole of its members in the three kingdoms have this year had an opportunity of voting for Councilmen; and we have no doubt whatever that those who have been so elected will value the great trust reposed in them, and to the utmost of their ability and convenience endeavour to carry out its duties.

The responsibility imposed on the profession in this respect is not light; but if it is determined to elect only those who have already well, disinterestedly, and faithfully served it, or who are in a position to afford it further service, and are likely to promote its best interests, irrespective of schools or coteries—then we have no fear for the result.

Editorial.

EXPERIMENTS IN CONTAGIOUS DISEASES.

The experimental method of investigation in physiology is generally acknowledged, by biologists and others, to have conferred great benefits in discovering or establishing facts relating to this important science; and few, we think, will be found to deny that the same method applied to pathology has thrown, and will continue to throw, much light on morbid processes, and, in leading to a better understanding of these, will vastly promote the science of therapeutics. For now many years the experimental method has been adopted in investigations into the transmissibility of contagious diseases in animals, either of the species to which the disease was limited, or to other creatures more or less susceptible to its influence. These experiments have had for their object either to prove the contagiousness of the malady—the potency of its infecting element—the modes by which the infection could be conveyed to healthy animals, the channels by which it could obtain access to the living organism, its period of latency and mode of development, the symptoms—varying or constant—to which it might give rise, the pathological alterations produced by the artificially transmitted malady, and other points of more or less moment to the student of disease or sanitation. The history of medicine offers many illustrations of the benefits which have been derived in this way, and in our own science we are indebted for much of our knowledge of contagious diseases to experimentation; while we must continue to look forward to this method to aid us when either our powers of observation are at fault, or our judgment is wavering. Baglivi says, "*Medicina tota est in observationibus*," and this is so far true; but cases often arise in medicine when observation fails us to a greater or less extent, and when it is necessary to demonstrate experimentally what is otherwise obscure or doubtful. But this demonstration is not always easily accomplished; on the contrary, it is often most difficult and uncertain. In the artificial transmission of a contagious or infectious malady, we do not always know the conditions upon which its successful conveyance depends; and even when we do know, we cannot always control those conditions. In "Veterinary Sanitary Science and Police" (vol. i. p. 187), we have pointed out that the extension or transmission of a contagious disease demands four conditions which are absolutely indispensable. These are: (1) The presence of the infective agent or virus; (2) Its integrity or potency; (3) Its contact with living tissues; and (4) Its absorption. The animals to be infected must also be in a condition to receive the contagium, for every one may not become affected; indeed, nothing is more striking in these diseases than the aptitude to receive them, or the immunity from them —a condition that does not always exist in the same animal, which may resist repeated attempts at infection, and at last become diseased. There is also the mode and the channel by which the poison may be

introduced, as well as the species of animal, and other considerations which we fear are only too frequently not known, or are overlooked by those who attempt the experimental method.

Hence it is that we have the most serious errors committed, and hence it also happens that we have the conclusions hurriedly drawn from the negative results of experiments, brought into direct opposition to the experience derived from every-day observation. We have more than once pointed out the great danger of drawing conclusions solely from negative results in experimentation, and particularly when observation pointed in the opposite direction. When the results are positive, then the case is entirely the other way, and this affirmation is of the highest value. It has often happened to ourselves that we have failed to transmit to a healthy creature—and even to a number—a disease notoriously contagious. What must it be, then, with one the contagiousness or mode of transmission of which is rather obscure? For years before Jenner introduced vaccination, observation had proved to non-scientific minds that inoculation with vaccine matter was a preservative from human Variola; had Jenner's early experiments produced only negative results—as they might have done—and he had accordingly declared observation to be at fault, he would have missed his immortality, and humanity might have lost for ever what is now a priceless boon. It might almost have been the same, had he maintained that, because inoculation with the vaccine virus did not produce all the symptoms and pathological alterations peculiar to Variola, it could not therefore be a preservative from the disease.

This has happened as the result of a very small number of negative experiments in the Contagious Pleuro-pneumonia of cattle, and has also been said as to preservative inoculation for that malady.

For years the horses of the French army were decimated by Glanders, which proved a terrible scourge. Because a few experiments at Alfort yielded negative results, the conclusion was jumped at that Chronic Glanders was not contagious, and therefore diseased horses were kept in the ranks among the healthy ones. For a long time also, and in consequence of the negative results of many experiments, the belief was widely prevalent, and acted upon, that horses and other animals could not become affected with Glanders through the digestive organs. Though clinical observation indicated otherwise, yet as experimental evidence was opposed to it, so for a long time incredulity was predominant. No fact is now better established than that horses, and even carnivorous animals, are readily and frequently infected through the stomach.

But we need not multiply instances which are so abundantly found in our medical annals; and our object now is to once more direct attention to, and to insist upon the necessity for remembering, the fact that when the results of experiments of this kind are negative, and the experience derived from observation is positive, with regard to contagious maladies, then the conclusions drawn from the experiments are to be received with the greatest caution. One positive experiment

is worth five hundred, or even a thousand, negative ones, so far as clinical observation is concerned.

The immense importance of bearing this fact in mind, is over and over again shown in the history of epizoötic diseases—though some peculiarly-constituted minds affect to ignore or depreciate this history, probably because they do not understand or are unacquainted with it. But a very significant illustration will be found in the report of the experiments now being carried on at the Brown Institute, with regard to Pleuro-pneumonia and Foot-and-mouth Disease, and which we publish in another page. It will there be found that all the attempts made to transmit the latter malady by inoculation and other means—save actual cohabitation—failed with a number of animals, and this failure was being quickly seized upon to prove that, if contagious at all, the malady was, at any rate, very much less so than had been imagined. And this notion was being promulgated by those who, even if their powers of observation had been of a very ordinary kind, or their memory at all retentive, must have known that few diseases are more readily transmissible, more infectious, or more rapidly extended over vast regions, than this, which the experiments went to prove was not capable of being conveyed to animals in the ordinary way. Had the experiments not been continued, we should probably have again had preached to us the old doctrine—the "atmospheric," or "something-in-the-air" nonsense, and the "Let-well-alone" dictum might have been modified to "Do nothing at all."

Of course, those who understood the nature of the disease, and were aware that it had been produced experimentally times without number, knew that one or more of the conditions necessary for successful transmission must have been absent—as no doubt did the experimenters at the Brown Institute. It will now be seen from the further report by Professor Duguid, which appears in the Proceedings of the Royal Agricultural Society, that "four of the experimental animals have become affected with it (Foot-and-mouth Disease), by feeding them with hay moistened with the saliva of diseased animals. *And had the virus of Foot-and-mouth Disease been more readily obtained, the others would in all probability have been infected before the present time.*"

The British farmer cannot be too thankful for the narrow escape he has just had. So much stress has lately been placed on the value of negative experiments by those high in authority, that he would have been made a greater victim than ever to the "atmospheric" and "something-in-the-air" fiction, and doubtless would have been compelled to submit, for another generation, to the "rest-and-be-thankful" principles which have well-nigh ruined him, and have caused England to be looked upon everywhere as the most dangerous country in the world to receive live stock from.

We cannot too strongly insist upon the urgent necessity there exists, for accepting the conclusions drawn from negative experiments with the utmost caution, or rather, suspicion, and especially when they are not in harmony with clinical observation. Our agriculturists have had

to yield themselves as subjects for many experiments in years past. They should be careful in accepting the results of unsuccessful ones in days to come.

Before members of the veterinary profession can receive as conclusive evidence of the non-contagiousness, either by mediate or immediate influence, of those diseases which their every-day experience has taught them to look upon as contagious, the experiments must be repeated again and again on a *large number of animals*, under every possible condition favourable for transmission, and with the most scrupulous care. One experiment yielding positive results will upset the deductions drawn from countless negative ones.

PLEURO-PNEUMONIA AND FOOT-AND-MOUTH DISEASE EXPERIMENTS.

DR. BURDON SANDERSON contributes to the *Journal of the Royal Agricultural Society* the following "Report on the Progress of the Investigations into Pleuro-pneumonia and Foot-and-mouth Disease, now being conducted at the Brown Institution."

PLEURO-PNEUMONIA.

As already reported in Vol. XII., Part ii., the experiments on Pleuro-pneumonia were not begun till the end of August, when the animals were in perfect health, and in as good condition as when they arrived at the Institution.

The first animals subjected to experiment were two yearlings. In one of these the exudation liquid, with which the lungs of diseased animals in the developed stage of the disease abound, was injected into the circulation. The liquid was used in an entirely undiluted state, and was derived from the lungs of animals just slaughtered. In performing the operation, the greatest care was taken to avoid the entering of the infecting liquid into the cellular tissue. The other animal was inoculated subcutaneously by injection into the cellular tissue. This case was also carefully watched. No effects were observed, except slight primary swelling at the seat of inoculation.

On the 3rd of November a good opportunity offered for the inoculation of a greater number of animals; liquid of the same kind was used, and was injected into the circulation of three animals—viz., two two-year-olds, and the yearling which previously had been inoculated in the cellular tissue and had continued throughout in perfect health. On the same day a cow was inoculated in the way ordinarily adopted for prophylactic purposes—viz., in the tail. In this case slight swelling and tenderness ensued about the fourth day. The swelling increased very slowly up to the tenth day, after which it began to subside. But after the fourteenth day signs of softening appeared at the seat of the puncture, and eventually a small slough was formed which corresponded exactly with the line of puncture by the needle. Since that period the process has gone on in the neighbouring tissue, so that at present the end of the tail, from a little above the seat of the inoculation, is undergoing slow necrosis. It is further to be noted that the swelling, up to the present time, has not extended to any distance from the seat of disease, and that the animal is still in perfect health and fair condition.

On November 10th, a calf nearly two months old was inoculated by injec-

tion into the venous system, in the same way as has been already described. There was in this case some local reaction, lasting for over a week—a circumstance probably attributable to the greater difficulty of performing the injection without interfering with the tissues in the neighbourhood of the vein. There has, however, been no general disturbance of the system.

Although I am not able to express an opinion as to the main question, it is worth while pointing out that the present experiments show, in the most convincing manner, that not only subcutaneous inoculation with diseased material can be performed without danger, if the necessary precautions are used, but that the more serious operation of injecting pulmonary exudation liquid into the circulating blood is not attended with any immediate results.

FOOT-AND-MOUTH DISEASE.

The experiments on Foot-and-mouth Disease were begun early in June. In the order of dates they are as follows :—

1. On June 12th, two cows were inoculated with saliva collected fresh from diseased animals at Deptford; the mode of inoculation employed was by scarifying the gums.

2. On the 22nd of June the same animals were again operated on by submucous puncture, the material employed being diseased epithelium taken fresh from unruptured vesicles.

3. On the 29th the same two cows were fed with hay which had been steeped in the saliva of diseased animals. It was given within about three hours of its collection.

4. On July 11th the same method of inoculation as in Experiment 1 was again employed for the infection of two calves.

5. On Aug. 3rd the same calves had their gums again scarified, and saliva applied, and were then fed with a small quantity of hay soaked in the saliva of diseased animals.

6. On the 15th of August they were again fed with hay wet with the saliva of diseased animals.

7. In experiments 1, 2, 4, and 5 (each on one animal), infection was attempted by the method of subcutaneous injection of saliva, in addition to the other modes of operating, in the animals referred to.

8. On Oct. 28th the young calf, two months old, was injected subcutaneously with saliva.

9. The exudation material derived from the matrix of a diseased hoof was mixed with neutral and non-irritating saline solution, and injected subcutaneously in three animals, each receiving three separate punctures—viz., one in the ear, the second in the perinæum, and the third at the border of the hoof in the heel of the fore-foot.

The general result of these experiments has been, that in every instance, without exception, the effect of subcutaneous puncture has been to produce a limited abscess, containing a slough, with scarcely any extension of inflammation to neighbouring parts. In the case in which the punctures were made at the border of the hoof, no effect could be observed.

With reference to the general question of the communicability of the disease, the results must as yet be regarded as negative.

It is proposed to continue the investigation as follows :—

As regards Foot-and-mouth Disease, the experiments will be continued on the same plan, but new methods of infection on other animals will be tried.

As regards Pleuro-pneumonia we propose—

1. To repeat on those animals that have not yet been used for experiments on Pleuro-pneumonia the injection into the circulation.

2. To repeat on some the subcutaneous injection.

3. To subject animals previously tested by injection to the inhalation of fresh dried materials into the lungs.

4. To test the influence of cohabitation, by introducing some of the animals already experimented on by the other methods of infection referred to into stables occupied by diseased animals ; and—

5. To have some of the others slaughtered, for the purpose of ascertaining whether or not, in the absence of any appreciable signs of infection, the lungs or other internal organs exhibit any latent changes, corresponding to undeveloped stages of the disease.

[The sequel to these experiments will be found in the report of the Royal Agricultural Society's Council meeting on p. 68, "Proceedings of Societies."]

THE UTILIZATION OF HORSES' URINE.

In consequence of the way in which horses are stabled in Holland, the urine cannot be collected but when mixed with a considerable quantity of water. Hence the liquid manure of stables is of so little value to husbandmen that it will not defray the cost of carriage. Being of no avail to agriculture, this manure contributes to pollute both the soil and the running water.

The Utrecht Society for the Improvement of Public Health is of opinion that a process may be found so to detach the nitrogenic elements from the liquid manure of horse-stables, that it can be turned to account by manufacturers ; and so to purify the remaining liquid that it may, without any detriment, be allowed to run into the rivers.

The above Society therefore offers a prize of a hundred guilders to whoever shall write the best treatise under the following heads :—

1. A brief statement of what has already been written on this subject.

2. An account of the investigations made by the author himself with the view of extracting from horse-urine, mixed with water, products which, either as manure or as chemical preparations, can be brought in considerable quantities into the market.

3. Detailed numerical tables of quantitative chemical analyses.

4. Financial aspect of the question : viz., an estimate of the expense of the establishments and apparatus required ; an estimate of the probable costs of the process ; and a statement of the minimum number of horses to which the process can be practically applied.

The essays may be written in Dutch, French, German, or English. They must contain no indication of the writer's name ; but must be marked with a motto, and accompanied by a sealed letter enclosing the name (and address) of the author. The cover of this letter shall bear the same motto as that inscribed on the essay.

The essay must be forwarded to Prof. Dr. Th. MacGillavry, Director of the Veterinary School of Utrecht, before 1st September, 1878.

Unsuccessful essays will be returned to such addresses as may be indicated, while those to which a prize is awarded will be printed in the Reports of the Society, before insertion in which the author will not be allowed to publish his essay.

THE SO-CALLED ENTERIC OR TYPHOID FEVER OF THE PIG.*

BY DR. KLEIN, F.R.S.

I PROPOSE to give in this memoir a preliminary account of the results of an inquiry into the disease commonly called Pig-Typhoid. Dr. Budd, in a lecture to the members of the Royal Agricultural Society in 1865, and in his well-known treatise on Typhoid Fever, speaks of this disease in the pig as of the "exact counterpart of Typhoid Fever in man;" and Professor Wortley Axe, in his recent remarks on Typhoid Fever in pigs (the *Veterinarian*, July 1875, p. 489), concurs with this assertion of Dr. Budd, by trying to show that in etiological, clinical, and anatomical respects, both diseases are identical.

Being myself engaged in studying the anatomy of Typhoid or Enteric Fever in man, I was naturally anxious to see whether more light could be thrown on this disease by an experimental and anatomical inquiry into its "counterpart" in the pig. I was, therefore, greatly disappointed when, at the very outset of this inquiry, I found that in an anatomical sense the two diseases are essentially different from each other.

It is admitted by all pathologists that the anatomical lesions in human Typhoid are of so definite and specific a character, that by them, and by them alone, the disease can be recognised in most cases. As I shall show, the anatomical lesions in Pig-Typhoid are likewise of a very specific nature; being not only very characteristic of this and no other disease in the pig, but also essentially distinct from the human Typhoid. It is true the Pig-Typhoid bears some resemblance to real Typhoid in man, but this resemblance is not greater than that amongst infective diseases in general. As is well known, Pig-Typhoid is a highly infectious disease, associated with an eruption of the skin and ulceration of the large intestine. It has been assumed that the intestinal discharges are the carriers of the contagion, but this assumption seems not to have rested on any direct experimental proof; though from Professor Axe's experiments, it appears that lymph from the pustules of the skin of diseased animals has the power of producing the disease when inoculated into the skin of healthy animals.

I have succeeded in proving, experimentally, that the disease can be produced by inoculating into healthy animals matter obtained from the ulcerations of the intestine; and likewise that the blood of the diseased animals, at a stage when all symptoms are well developed, does not necessarily contain the contagium. In the latter respect the Pig-Typhoid is essentially different from Anthrax, with which it is usually confounded by Continental writers on account of a certain similarity of the anatomical appearances in the two

* From the "Report of the Medical Officer of the Privy Council" for 1876. In an early number of the *Veterinary Journal*, we insisted on the dissimilarity between this disease of the pig and human Typhoid. The differences between the two are to be found not only in their morbid anatomy, but also in their symptomatology and mode of infection and extension. If the disease of the pig must be compared with, or assimilated to, any malady affecting the human species, we would be inclined to place it with Scarlatina or Measles—certainly not with Typhoid, so far as our researches extend: and we have been rather fortunate recently in being provided with opportunities for studying the scourge. At a recent meeting of the Pathological Society of London—at which Dr. Klein read a paper on the malady—Dr. Murchison, the president, said that ten years ago he brought the subject before that Society. The disease had nothing to do with human Typhoid: there was no Typhoid rash on the skin; indeed, the rash was more like that of Scarlatina. It was popularly termed the "red soldier."

diseases; for in Anthrax the blood, as is well known, is pre-eminently loaded with the contagium.

A.—The experiments to be recorded in the following have been carried out in conjunction with Mr. W. Duguid, veterinary surgeon at the Brown Institution. They were all performed on young animals.

Experiment 1.—Two perfectly healthy pigs were fed on a piece of large intestine full of ulcers; the material was used perfectly fresh, just as it was removed from the animal that had been killed for the purpose of the research. The animals remained perfectly healthy.

Experiment 2.—Small pieces of the spleen of a Typhoid pig, full of whitish nodules of different sizes (see the following section), were rubbed up with three-quarters per cent. saline solution; of this material one healthy pig received a considerable quantity as food; a few divisions of a Pravaz syringe of the same material were injected into the skin of the groin of another healthy pig. The first animal died on the eighth, the other on the twelfth day; in both cases the "Typhoid" symptoms were very well marked.

Experiment 3.—A healthy pig received into the skin of its right groin half a syringeful of the blood and juice of a swollen lymphatic gland, taken from an animal recently dead of the disease, and in which all the anatomical appearances were very well marked. The infected animal showed no signs of the disease for sixteen days, except a small hard nodule (the skin not adherent) in the subcutaneous tissue at the seat of the injection; so that we are quite justified in assuming that the result of the experiment was negative. And this is of very great importance, inasmuch as it tends to furnish direct additional proof of the difference between Anthrax and the disease in question, the former being pre-eminently infectious through the blood.

Experiment 4.—From the same pig as in the preceding experiment fresh material was obtained (by scraping) from an ulcer of the large intestine, and this material, having been suspended in three-quarters per cent. saline solution, was injected into the skin of the groin of a healthy animal. After ten days the animal died, with exceedingly well-marked appearances of Pig-Typhoid in skin, intestine, lung, and lymphatic glands. The inguinal lymphatic glands near the seat of inoculation were especially enlarged, and deep-red. The soft palate was swollen, and contained follicular ulcerations.

Experiment 5.—Ulcerated parts of intestine of the same animal as that used in experiments 3 and 4 were kept macerating in water for three days, and then swallowed by a healthy animal. This animal died after thirteen days, under very marked symptoms of Pig-Typhoid: the appearances of skin, intestine, lung, lymphatic glands, etc., being exceedingly well developed —much more than in experiment 4.

The experiment does not, however, prove, as it seems to do, contrary to the experience of experiment 1, that the disease may be communicated by the food; for the very important fact of the infective material having had to be introduced by force must not by any means be lost sight of, as rendering more than possible that in the struggle superficial injuries to the mucous membrane of the mouth may have been the means of effecting inoculation, and that, therefore, this experiment 5 may belong to the same category as experiment 4—*i.e.*, inoculation through direct injection into the connective tissue of the integument. Whether this is so or not we intend to determine by new experiments.

Experiment 6.—The last experiment for the present, but not the least important one, is this: The same animal that had been inoculated with blood and juice of lymphatic glands, and, as we have seen, remained healthy, was again inoculated into the left groin on October 19th,—this time not with

blood, but with material obtained (by scraping) from an intestinal ulcer of the animal that had died in consequence of experiment 5.

The animal showed very little marked alterations while alive, but, being killed after twelve days, was found to present the following changes : At the seat of the second inoculation there was an abscess in the subcutaneous tissue, this being at the same time closely adherent to the skin. The inguinal glands of the same side much enlarged and very red ; so also the lumbar, sternal, and bronchial lymphatic glands. The two last-named had the very characteristic aspect of the lymphatic glands in Pig-Typhoid : see the following section. The mucous membrane of the intestine pale, except at the ileo-cæcal valve, which contained a few very small defects of the mucosa ; and microscopic examination proved unmistakably that the mucosa at the ileo-cæcal valve was diseased, though only in a mild degree : see the last section.

The appearance of the lymphatic glands, and the microscopic examination of the intestine (ileo-cæcal valve) in this case, leave no doubt about the animal having been suffering under a very slight degree of Pig-Typhoid. This experiment contrasts in an important manner with experiment 3—for both were performed on the same animal ; but in experiment 3, where blood and juice of the lymphatic glands had been used as inoculation-material, no disease was produced, whereas in experiment 6, where material of an ulcer had been inoculated, the animal became smitten with Pig-Typhoid. It might be argued that the condition of the lymphatic glands and intestine as found after the animal was killed may be, perhaps, referred to the first inoculation ; this objection can easily be disposed of, for the microscopic examination proved the changes of the lymphatic glands and intestine to be of recent date ; and besides, the characteristic typhoid charges of the inguinal glands near the seat of the second inoculation are quite conclusive.

It is, however, clear to us that in order to arrive at definite conclusions we have to repeat the experiments. As far as they go at present we are inclined to assume,—

(1.) That the skin of the diseased animals contains the contagium, as appears from the experiments of Professor Axe.

(2.) That the ulcers of the large intestine, and likewise the diseased spleen, contain the contagium, as appears from my experiments 2, 4, 5, and 6.

(3.) That the contagium is probably not contained in the blood and lymphatic glands at a late stage of the disease ; but before this negative conclusion is accepted, additional experiments are particularly requisite.

(4.) That the disease can be produced by inoculation from intestinal ulcers into the skin, as appears from my experiments 4 and 6.

(5.) That whether the same can be achieved by simple feeding with matter of the intestinal ulcers is doubtful : see experiments 1 and 5.

Whether the contagium is also contained in the lung, and whether the disease can be produced by inoculating directly into the blood, are questions which cannot be answered without additional experiments.

B. The following are the appearances presented by our animals at the *post-mortem* examination :—

(*a.*) *Skin.*—In most of the twelve animals that were examined the skin was affected. The skin about the perinæum, symphysis, and groins was swollen and of diffuse red colour ; so was also the skin of the neck. The ear-lobes much swollen, especially near the tips, and red. The same of the skin of the nose. In two cases there was no distinct rash, and in one case there were in the skin of groins, and especially in both ear-lobes, (a few in former, numerous in latter place,) smaller or larger necrotic patches of the superficial part of the skin, including epidermis and corium.

(b.) Intestine.—Small intestine shows, as a rule, Hyperæmia, and in some cases Ecchymosis in the mucous and submucous tissue, and the serous covering. In some rare cases the same is seen also in the stomach. Large intestine shows always the most characteristic appearances. There are at least smaller or larger, isolated or confluent, generally roundish, ulcerations at and around the ileo-cæcal valve, the rest of the mucous membrane being hyperæmic, even to Ecchymosis. In the highest degree the whole large intestine down to the rectum contains ulcers; in the cæcum they are confluent, and measure several inches, extending transversely as well as longitudinally; while the whole remaining mucous membrane of the large intestine is much thickened, and in some parts the submucous tissue contains large accumulations of blood. The ulcers are of various aspects. The following forms may be seen: very minute, well-defined, prominent, yellowish-white specks of the size of a millet or hemp-seed; then somewhat larger, more flattened, prominent, circular or oval yellowish patches (with which in one case the whole mucous membrane of the cæcum seemed quite covered), of the size of a hemp-seed, up to about $\frac{1}{8}$th of an inch in diameter; next, flat, circular, or slightly oblong patches, situated on the crest of a fold of the mucous membrane, in size from $\frac{1}{8}$th to 1 inch in diameter, generally black or grey (from bile pigment), except a very conspicuous and, I may almost say, characteristic prominent rim, which is yellow. The ulcer generally shows a pale, central, or eccentric disc, around which the rest of the ulcer is arranged as concentric rings. Between these flat ulcers with concentric layers, and those uniform yellowish-white prominent patches and nodules, there are all intermediary forms; this is easily understood if it is borne in mind that as the latter increase in size, the central part is transformed into that black or greyish mass. Besides these there are very often found on the surface of the mucosa minute whitish specks, just perceptible by the unaided eye. In one single instance have I seen ulcerations of the lower part of the ileum. This case had exceedingly numerous ulcerations of the large intestine. The two ulcers of the ileum were quite different from the ulcers generally found in the large intestine, for they were oblong, deep pits, surrounded by a thick, prominent wall of swollen mucous membrane, very much the same as ulcers of human Typhoid; on the peritoneal surfaces there was an elevation corresponding to them.

The above-described ulceration of the large intestine of the pig cannot in any way be confounded with the characteristic ulcers of human Typhoid; the differences are really striking on the most superficial inspection. The only similarity may be said to exist between those early cases of human Typhoid which French writers call *la forme bouttoneuse* (where the mucosa of the lower part of ileum and cæcum is studded with small papular structures, due to enlargement of solitary lymph-follicles and local accumulations of lymphatic tissue), and the forms of Pig-Typhoid where the mucosa of the cæcum is covered with slightly elevated papulæ or patches. But under any circumstance the microscope reveals a marvellous difference in the two diseases, for in the Pig-Typhoid these patches, whether nodules or ulcers, *have absolutely nothing whatever to do with lymphatic follicles;* whereas in human Typhoid we find, in the first stage, round or generally oblong, prominent, papulæ or patches of swollen lymph-follicles, surrounded by swollen mucous membrane; after which stage the greater part of the swollen lymphatic patches dies and is finally discharged as a slough, leaving behind a pit-like excavation bordered by elevated overhanging mucosa.

(*To be continued.*)

Reviews.

THE BOOK OF THE HORSE. By S. Sidney. London: Cassell, Petter, and Galpin.

Mr. Sidney's "Book of the Horse" is a grand one, in size, style, and matter, and we fancy that few horsemen or horsewomen who can afford to purchase it will be without it. We do not know that there is any book on the horse or on horsemanship at all equal to this. The coloured plates are superb, the wood engravings are excellent, numerous, and illustrative in the true sense of the term; while the finish of the book, with its profusion of gilding and massiveness, makes it well deserving of a conspicuous place on the drawing-room table.

The credit for most, if not all of this, must, of course, be awarded to the enterprising publishers; and we trust that a large sale may recompense them for their great liberality in promoting the welfare and utility of the most useful, beautiful, and noble domestic animal we possess. And Mr. Sidney well merits all possible praise for furnishing those who keep horses because they must, as well as those who keep them because they love them, and have them chiefly for pleasure, with a book which is crowded with solid information, imparted in an easy, pleasant style, on everything connected with the management and utilization of all sorts and sizes of the equine genus. The large experience of a fairly long lifetime among horses, the natural tastes of a horseman, and an educated mind and eye for all that concerns the fascinating animal, as well as constant contact with kindred spirits and an intimate acquaintance with much of what has been written and said on matters pertaining to the horse,—all have rendered Mr. Sidney eminently qualified for his task, and make his opinions and advice peculiarly valuable.

Not only are horses discoursed about, and their breeds, points, health, management, etc., duly and practically considered, but the best, most humane, and "elegant" way of using them, are described as none but an accomplished horseman could succeed in doing. A very interesting and valuable chapter treats of carriages; another of harness and saddles, bits and bridles; another, well worth careful reading, on the "purchase of horses"; another on hunting: in fact, the work contains the most ample information on everything necessary to be known by those who have to do with horses.

The author shows his wisdom in the chapter headed "Veterinary Information," in avoiding bewildering descriptions of diseases, their symptoms, and treatment, and in not attempting to teach every man to be his own quack. We are convinced, from nearly every-day experience, that amateur doctoring is not profitable, and that horse-owners would best consult their own interests, and also that of their property, if they adopted Mr. Sidney's advice: "When a horse is really ill, or meets with a serious accident, the only wise course is to send for a veterinary surgeon, whose profession it is to discover the cause of illness, to know the structure of the bones and muscles, and to apply the appropriate remedies or perform the necessary operations." The information given

in this chapter is only with a view to emergencies, when the veterinary surgeon may not be within immediate reach.

We congratulate Mr. Sidney and his publishers in producing a book in every way worthy of a nation of, we were about to say "horse-worshippers," but we will, for fear of being accused of profanity, say "equestrians" in the real meaning of the word. Its study will benefit experienced horsemen, while for the novice or amateur it will be found to combine business with pleasure. It is eminently useful and ornamental.

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD MAY 29TH, 1877.

Present—Colonel Sir F. Fitzwygram; Messrs, Balls, Batt, Broad, Blakeway, Collins, Cuthbert, Cartledge, Dray, Fleming, Gowing, Greaves, Harpley, Hunt, Reynolds, Taylor, and the Secretary.

On the motion of Mr. DRAY, seconded by Mr. BALLS, Col. Sir F. Fitzwygram was voted to the chair.

The SECRETARY read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Letters were read from Professor Williams, Edinburgh, and Mr. Cox, regretting their inability to attend the meeting.

Election of President.

Mr. DRAY said that once more he had the honour and very great pleasure of proposing the election of Col. Sir Frederick Fitzwygram as President of the Council. No words could sufficiently express the great obligations they were under to Sir Frederick, for his unceasing care and unabated energy in promoting the interests and advancement of the veterinary art. Gentlemen equal to Sir Frederick were seldom met with. Position, influence, generosity, and great ability had all been combined to raise the status of the profession. The unceasing attention and the valuable time Sir Frederick had given to the performance of his duties were unprecedented. As a proof of his assiduity—if any were required—he would refer to Sir Frederick's visit to Leeds at the annual meeting of the Yorkshire Veterinary Medical Society, and his journey to Scotland to attend the examination of the students. He therefore indulged in the hope that the Council would retain Sir Frederick's estimable services as President.

Sir F. FITZWYGRAM said he should like to state that it had not been his wish, even if the Council were pleased to elect him, to accept the office of President, and that for several reasons. He felt that in some respects it was undesirable that the same person should remain in office for three years. The office of President was an object of honourable ambition on the part of a great many members of the profession, and therefore he considered it was undesirable and almost selfish that one person should hold it for so long a period. Mr. Dray, however, had spoken of him in the most kindly terms;

and if it should be the general wish of the Council that for another year he ought to retain the office of President, he should have great pleasure in doing so. He had been engaged for the last four or five years in matters of very considerable importance, which were as yet scarcely finished, and he felt that his duty towards the measures he had undertaken was not quite completed until he saw those measures fairly established. Of course, he could not pretend to anticipate what the result of the election might be, but he had made up his mind that, should it be a general wish that he should accept the office of President, he should have great pleasure in doing so.

On the ballot being taken, it was found that the President was unanimously re-elected.

The PRESIDENT thanked the Council for the honour that had been bestowed upon him, and said it would be his pride and his pleasure to do the best he could in the high office to which he had been re-elected.

Election of Vice-Presidents.

The Council then proceeded to the election of six Vice-Presidents.

Mr. Moore and Prof. Duguid were nominated by Mr. Harpley.

Mr. William Smith, of Norwich, was proposed by Mr. Cartledge.

Mr. Withers,	,,	Mr. Broad.
Mr. J. Woodger, jun..	,,	Mr. Gowing.
Mr. Jas. Freeman, of Hull,	,,	Mr. Dray.
Mr. T. P. Gudgin,	,,	Mr. Collins.
Prof. Walley,	,,	Mr. Fleming.
Mr. Cartwright,	,,	Mr. Taylor.
Mr. George Morgan,	,,	Mr. Reynolds.
Mr. Martin Naylor,	,,	Mr. Hunt.
Professor McCall,	,,	The President.

The balloting was then proceeded with, and the following was the result:—

	Votes.		Votes.
Mr. Withers . .	16	Mr. Jas. Freeman .	7
Mr. Woodger, jun. .	10	Mr. Morgan . . .	5
Mr. Cartwright . .	9	Mr. Naylor . . .	5
Prof. McCall . .	9	Mr. Moore . . .	4
Prof. Walley . .	8	Prof. Duguid . .	4
Mr. W. Smith . .	7	Mr. Gudgin . . .	4

Mr. Smith and Mr. Freeman, having received an equal number of votes, were again balloted for, when Mr. Smith obtained 11 and Mr. Freeman 6.

The PRESIDENT then declared Messrs. Withers, Woodger, Cartwright, McCall, Walley, and Smith duly elected.

On the motion of Mr. DRAY, Mr. Withers was unanimously re-elected Treasurer.

The PRESIDENT moved, and Mr. CARTLEDGE seconded, a vote of thanks to Mr. Withers for his services, which was carried unanimously.

On the motion of Mr. BROAD, Mr. Coates was unanimously re-elected Secretary; and on the motion of Mr. DRAY, he was re-elected Registrar.

This concluded the business of the first special meeting.

SECOND SPECIAL MEETING.

The following letters were received:—

Letters from Mr. Harpley, Mr. Blakeway, Mr. Cartledge, and Mr. P. Taylor, acknowledging their election as members of the Council.

A letter from Dr. Dunsmure in answer to a communication sent him some time ago with regard to a less number than nine students coming up for examination.

Dr. Dunsmure, in reply, stated that the Board was summoned, not for Glasgow, but to examine twenty-four students from the three Scotch colleges. He interpreted the late resolution of Council to mean that there was to be no examination unless there were nine students from all the schools collectively, and not from one only, and that odd students were to go from Glasgow to Edinburgh, and *vice versâ*, to make the requisite number. He desired to know whether the resolution of Council was to be strictly adhered to, and whether an examination for seven or eight was to be refused.

Letters were received from Sir Samuel Scott & Co., bankers, stating that they had now registered the death of the late Mr. William Field, jun., at the Bank of England, and that the necessary arrangements would now be made by their brokers, Messrs. Johnson and Longden, for the transfer of the stock of £1390 17*s.* 1*d.* belonging to the College Fund, and £640 19*s.* 11*d.* Consols, of the Royal College of Veterinary Surgeons. In accordance with instructions received, the surviving trustees, Messrs. Cartwright, Lowe, and Balls, attended at the Bank of England on May 24th, when the transfer was effected in both sums, with the additional name of Mr. James Collins as the newly appointed trustee.

Also another letter from Sir S. Scott & Co., May 25th, in which they stated that they had completed the transfer of Consols from the survivors to the joint account with the new trustee. They enclosed brokers' notes and stock receipts, and stated that the commission is debited to the account of the Royal College of Veterinary Surgeons.

A letter from Mr. James Moore, Upper Berkeley Street, was read, offering to give ten guineas, if 200 members would subscribe five guineas each, towards a fund to be raised before February, 1878, for obtaining an Act of Parliament to prevent unqualified persons assuming the title of veterinary surgeons, and styling themselves M.R.C.V.S.

The Secretary was instructed to acknowledge the receipt of the letter, and to say that the matter would be considered.

The SECRETARY stated that a letter was received addressed to the President from Mr. Furnival, Kingston-on-Thames, asking his authority to insert an advertisement in two local papers, to the effect that J. C. Aspin, styling himself in the local directory M.R.C.V.S., was not a member of the College. A disclaimer was sent by the Secretary for his insertion. Mr. Furnival then replied, enclosing address of the publisher of the "Kingston Local Directory," suggesting that a sharp reprimand be sent for inserting Aspin's name with the initials M.R.C.V.S., and that he wished to have a copy of the disclaimer by Thursday next. A second copy of the disclaimer was then sent. The publisher of the *Surrey Comet*, Kingston-on-Thames, wrote to the Secretary on that day (Tuesday), stating he had received from Mr. Furnival a disclaimer for insertion; but as it was a serious charge, he wished to know if he had the Registrar's authority for its insertion.

The PRESIDENT instructed the Secretary to reply in the following terms: —"Sir,—the letter to which you allude was written by me in my official capacity as Registrar of the Royal College of Veterinary Surgeons, in reply to an inquiry whether Mr. Aspin is a member of the Royal College of Veterinary Surgeons. It is simply the statement of a fact."

A letter from Dr. Taylor, stating that if his attendance was required at the July examinations, under the old regulations, on receiving notice he would attend; but with respect to the new regulations, he wished to have his name withdrawn for re-election.

A letter from Mr. Birkett in reply to the resolution of Council, and begging to decline the post of examiner on histology, although he would be happy to continue the examination as heretofore.

A letter from Dr. Burdon-Sanderson, offering himself as a candidate for examiner on physiology.

Letter from Professor Turner, acknowledging the resolution passed by the Council in October, 1876.

A letter from Mr. Harpley, tendering his resignation as a member of the Court of Examiners previous to the appointment of the new Board, and stating he was ready to serve again on the Examining Board.

Also a letter from Mr. Fleming, tendering his resignation as a member of the Court of Examiners, but willing to accept office if re-elected.

A letter from Mr. G. A. Oliphant, Hapur, N.W. Provinces, India, enclosing ten guineas, being the fee for his election as Primary Fellow, and one from his brother, acknowledging the receipt of diploma sent to him at Charlton, in Kent.

Also letters from Professors James Law, of Cornell University, U.S., and M'Eachran, Montreal, acknowledging receipt of their diplomas.

A letter was received from Mr. Richard Poyser, 6th Dragoon Guards, York, wishing his name to be entered for the degree of Fellowship at the first examination; also from Mr. Robert Ward, of Winchester, who is a candidate for the degree of Fellowship, wishing to know the amount of fee. Mr. William Hunting was also a candidate for the degree of Fellowship by examination, and he wrote saying that, having been a teacher at a recognised school, he was, he believed, rendered exempt from undergoing the ordeal of an examination at the College of Preceptors.

A letter was read from Captain Russell, of Grantham, requesting to know whether, if he should offer himself as a candidate for the Fellowship degree, he would be required to fulfil the conditions of "Bye-law 50." He pointed out that he had passed the requisite examination for his commission in Her Majesty's Army, besides other examinations.

The PRESIDENT thought that passing the ordinary army examination would be quite sufficient, and that Captain Russell had the ordinary general amount of education.

Mr. P. TAYLOR thought it was certainly going back to school times to call upon a man who had been a certain length of time a veterinary surgeon to go through the ordeal of a Preceptors' examination. He was of opinion this would militate against members of the profession coming forward to obtain the honorary degree of Fellow.

The PRESIDENT said that the only object of the Council in having the preliminary educational examination, was to ascertain that the person possessed the ordinary education of an English gentleman, and would not be a discredit to the profession. If Captain Russell had passed the ordinary examination for officers, he thought the Council would do unwisely to ask him to undergo another examination by the College of Preceptors. He proposed that an answer be sent to Captain Russell, stating that he could come up for a professional examination.

Mr. REYNOLDS pointed out that this would be over-riding Bye-law 50, which gave one alternative only. The applicant must be a graduate in arts, or produce a certificate of liberal education after an examination by the College of Preceptors.

The PRESIDENT said in that case it would be necessary to give the usual three months' notice to alter Bye-law 50, and instructed the Secretary to write to Captain Russell, informing him that he must wait until the expiration of that period.

The PRESIDENT brought forward the motion of which he had given notice, to strike out the words "writing of prescriptions" from the first clause of the "Regulations for the Examinations of Students." His reasons for so moving

were three. In the first place, it had been misunderstood in several quarters. Writing of prescriptions had been understood to imply that the students had some knowledge of medicine. The only object, however, was simply to secure a certain amount of education to the students in the first year of examination, because it was found, when a student came to write certificates for his last examination, sometimes the education was so deficient and the spelling so bad that the examiners were rather inclined to reject the student, which was a very hard case; and, therefore, this slight trial of his education was made on his first examination. It had, however, been objected to, and perhaps it was not worth pressing. His other reason for it was that it was proposed at the first examination that the examiners should sit singly, and if they had to sit singly he did not see how one of the examiners could take charge of the writing of prescriptions if he had to be single-handed in other subjects. He thought, thirdly, that as the Council proposed to ask the examiner sitting singly to examine twelve students per night instead of nine, it would be unwise to ask him also to supervise the writing of prescriptions. It was for these reasons that he wished the words to be struck out.

Mr. HARPLEY seconded the motion.

Mr. P. TAYLOR thought that the words ought not to be struck out, and that the writing of prescriptions ought to be carried out in the practical examinations. He thought it added to the dignity of a surgeon to be able, in a scientific manner, to write out a prescription.

The PRESIDENT said they could be added to Clause 8.

Mr. TAYLOR then moved that the words "and prescriptions" should be inserted in Clause 8, after the words "in the writing of certificates."

Mr. REYNOLDS seconded the motion.

The two motions were then put separately, and carried.

The SECRETARY read the following report of the Committee appointed to inquire into the equalisation of income and expenditure:—

"The Committee having assembled according to notice, proceeded in the first place to investigate the ordinary income and expenditure. In the past year many unusual expenses occurred, and the income was also increased by unusual receipts.

"Deducting, however, these extraordinary expenses and receipts, the ordinary income of the year appears to have been,—

From Examination fees . .	£1,134 0 0	
Dividends	19 0 0	
		£1,153 0 0

"The ordinary expenditure appears to have been,—

Examiners' fees	796 0 0
Rent, rates, and taxes	137 0 0
Salary to Secretary	150 0 0
Advertising and printing	55 0 0
Stationery and postages	28 0 0
Reporters	22 0 0
Coals, gas, and wood	20 0 0
House expenses and messenger	40 0 0
	£1,248 0 0

"Exclusive of the expense of examination, the usual annual expenditure of the College appears to be about £452. The average annual income, after defraying the expenses of the examination, appears to be about £357, showing an annual excess of expenditure over income of £95.

"The Committee believe that there are no means by which the income could be judiciously increased.

"The only income of the College is that derived from fees for examination of students; and the Committee think that it would not be advisable to increase the fees, especially after the tax lately laid on the rejected students.

"The Committee think the practice of advertising the examinations in the public newspapers unnecessary, and recommend that it be discontinued. This will effect a saving of about £12 per year.

"The Committee think a reduction might be made of £20 per annum on wages.

"The Committee consider it absolutely necessary that the expense of the examinations be reduced.

"This might be effected—1st, by reducing the number of examinations in the year; 2nd, by examining a greater number of students at each sitting.

"The Committee recommend that no more than two examinations be held in the year.

"The Committee recommend that the number examined at each sitting be increased from nine to twelve.

"The Committee also recommend that in case of broken numbers of students (*i.e.* less than twelve), the examiners should be requested to examine any number not exceeding four, on receiving a proportionate increase on the fee for the evening.

"The Committee suggest that the time given for the examination of each student should be reduced from twenty minutes to fifteen minutes.

"The Committee append a statement of the cost and receipts of examination on the supposition of examining nine students per night, and a statement of the examination of twelve students.

Receipt of Fees.	£	*s.*	*d.*
Nine students' fees at £3 3*s.*	28	7	0
Three examinations			3
	85	1	0
Nine registration fees at £1 1*s.*	9	9	0
	94	10	0
Expenses	55	3	0
	39	7	0

Disbursements.	£	*s.*	*d.*
For the First and Second Examinations, six examination fees at £3 3*s.*	18	18	0
For the Third or Pass Examination, five examination fees at £3 3*s.*	15	15	0
Four Practical Examination fees at £2 2*s.*	8	8	0
Incidental expenses, horses, etc.	2	2	0
Examiners' travelling expenses, etc.	10	0	0
	55	3	0

The result of eighty-one students examined, £354 3*s.*

	£	*s.*	*d.*
Twelve students' fees at £3 3*s.*	37	16	0
Three examinations			3
	113	8	0
Twelve registration fees at £1 1*s.*	12	12	0
	126	0	0
Expenses	55	3	0
	70	17	0

	£	*s.*	*d.*
Disbursement — examination fees, incidental and travelling expenses, as above	55	3	0
	55	3	0

The result of eighty-one students examined, £478 4*s.* 9*d.*

"The result shows that with nine students examined per night the net income of the College, after paying the expenses of the examination, would be about £350, which is much less than the present rate of expenditure.

"On the supposition of examining twelve students per night, the net income would be about £478 if the quota of twelve were complete each night. But if the numbers were less on any night, the profit would be less. Allowing for this, it would not be safe to take the estimate average income at more than £450. This would be sufficient for the reduced scale of expenses (which are about £420 per annum); it, however, does not include extra or unusual expenses, which are only too apt to occur.

"On the other hand, some income will be obtained from the fees on admission of Fellows.

"The above estimate of the expense of the examinations is grounded on the supposition that the Council adhere to the scheme of examiners sitting single at the first and second examinations.

"Finally, the Committee recommend (if the income under the plan suggested should prove to be insufficient) that the fee paid by the students on the third examination, where two examiners are employed at each table, should be increased from three guineas to four guineas.

"F. W. FITZWYGRAM,
"Chairman."

On the motion of Mr. DRAY, seconded by Mr. FLEMING, it was resolved that the report be received.

Mr. TAYLOR proposed that the report be printed, in order to give the Council time to consider it. He had a great objection to one examiner being at one table, and thought there ought in justice to the pupil to be two.

Mr. HARPLEY explained to Mr. Taylor that the only reason why one examiner was proposed was because there were no funds to pay two. It was quite within the knowledge of the Council that, for the last two or three years, the income had not been sufficient to meet the expenses. There were many things in the scheme which the Committee would not have brought before the Council if they could have seen any other way out of the financial difficulty. The only objection to printing the report would be the expense.

The PRESIDENT pointed out that the cause of the excess of expenditure over income had arisen mainly, not from any extravagance on the part of the Council, but from the fact that the same fee was charged as was charged five years ago, while the students were being examined twice for it; and now it was proposed to examine them three times for the same sum, and these three examinations would cost a good deal more than the one single examination. If there were to be three examinations some contrivance must be resorted to to cheapen them, either by having a single examiner, or by getting the examiners to examine a larger number in the evening, or by having a single examiner and a larger number examined. Even if this were done, the margin between the income and the expenditure would not be very large. The usual annual expenditure of the College, exclusive of examinations, was £452, and if this scheme were adopted there would not be a larger amount than £478; so that, even if there were a single examiner and an extra number examined, there would not be any surplus income. He quite agreed that it was more desirable to have two examiners sitting together than to have one; but that was not the question. They must either stand to their single examiner, or they must retrograde and have one examination instead of three, or some other plan. At the final examination, which was the principal one, there would be two examiners sitting at each table, and by the adoption of the new term "Indifferent," a single examiner would have the power to put "I" against the student instead of "B," and the "I" simply

put by one examiner would not reject the student. The terms had hitherto been "Good," "Sufficient," and "Bad," but perhaps now the middle term, "Indifferent," would be sufficient for a single examiner to use.

Mr. FLEMING said, as the examinations had been divided into three portions, if there were two examiners at each table the Council could never afford to pay them. It was entirely a question of finance, and he had not the faintest doubt also that the examiners would find that there was a large amount of responsibility resting on their shoulders, and that the duty of examining such a large number of students without any pause would be a very hard one.

In answer to Mr. Greaves, the PRESIDENT said that at present the Board would not be called unless there were nine students, and under the new regulation the Board would not be called unless there were twelve students. Supposing there happened to be fourteen students, it cost a considerable amount of money to examine the two extra students over and above the original twelve for which the Board was called. It had hitherto been the custom to pay the examiners for the extra number of two as a full number of nine or twelve, as the case might be ; and for that reason a clause had been put in, so that only the proportionate amount of fees for the extra number for the evening would be paid. He moved that the report be printed and a copy sent to each member of Council.

Mr. P. TAYLOR seconded the motion, which was carried.

The SECRETARY stated that Professor Brown had presented to the Library the "Annual Report of the Veterinary Department of the Privy Council."

On the motion of Mr. DRAY, seconded by Mr. GOWING, the thanks of the Council were awarded to Professor Brown for his presentation.

The SECRETARY asked for the sanction of the Council to destroy the minutes of the Board of Examiners taken at the examinations from 1844 to within five years of the present date, as they occupied a considerable quantity of room.

The PRESIDENT said he had looked over the papers, and thought they were quite useless, and if the examiners were to sit singly they could not be used. He would, therefore, move at the next meeting that they be discontinued.

Mr. HUNT was of the same opinion as to the inutility of the papers. He had a mode of keeping memoranda which sufficiently served his purpose in finding out what the result of the examinations was.

Mr. FLEMING gave notice that at the next meeting he would draw attention to the general education of the students, and make a motion thereon. His object was to get some uniformity in the education of students.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of this Society was held on Wednesday afternoon, in the London Hotel, Edinburgh—Mr. C. Cunninghame, Slateford, President, in the chair. There were also present Professors Vaughan, M'Fadyean, and Johnson, Messrs. Baird, Reid, Walker (7th Hussars), Balfour, J. Aitken, sen., Young, East Calder; J. Aitken, jun., Borthwick; Balfour, sen., and Cumming, Secretary.

The minutes of last meeting having been read and approved, Messrs. Moir, Edinburgh, and Mitchell, Bathgate, who had been proposed at last meeting, were duly elected members. A discussion on the rules of a proposed Scottish branch of the National Veterinary Benevolent and Mutual Defence Society, was postponed in consideration of the small attendance—Principals Walley,

Williams, and others being unavoidably absent. On the suggestion of Mr. Reid, it was agreed that the rules referred to should be printed and circulated among the members.

Interesting Cases.

Mr. BAIRD mentioned the case of a Collie dog in the last stage of Distemper, which had come under his notice. The animal was so bad that its owner had determined on having it destroyed. After being treated with doses of strong coffee and a little sweet milk, the animal was in a short time able to stand and walk. He had heard of this kind of treatment for certain ailments in horses, more particularly in France ; and he mentioned this case that they might adopt a similar line of treatment.

Professor M'FADYEAN, in the absence of Principal Walley, gave a short history of two cases of interest. The first was that of a horse, sections of whose third and fourth cervical vertebræ were ossified together. The animal was born with its knees imbedded in the hollow of the neck. It was found to have a deformity about the centre of the neck, which had a peculiarly arched appearance. The animal thrived, however, and at four years old was sold at £48. The purchaser feeling uneasy as to the horse's irregularity of action, and thinking it had suffered from disorder, sold it at a loss. It was subsequently sold and resold, and finally disposed of for the small sum of £8. It remained in the possession of its last owner for a period of ten years, during which time it did its work remarkably well, and, in fact, was said to be one of the strongest horses in Leith,—though it always exhibited a slight irregularity of action, the cause of which remained a mystery till the animal's death, when the ossification of the two vertebræ was discovered. It was hardly possible to understand how the functions of the spinal cord could have been properly performed under the peculiar circumstances. The second case was that of a horse which died after having eaten a portion of oil-cake, which was of the same manufacture as that which occasioned the death of a number of cattle at Haddington. During Saturday, the 13th January, the horse was engaged in carting cake, and the carter gave the animal half a cake. The horse died on the night of the following day in convulsions. The following are Principal Walley's notes on the case :—

"On the night of the 13th January I was asked to see a black horse, which the owner said was dull, restless, and off his appetite. As the symptoms did not appear urgent, and I was very tired at the time, I sent a ball composed of carbonate of ammonia and opium, and gave directions that a message be sent immediately if the symptoms became of a more urgent nature. I saw the horse about 11 a.m. the next day, and observed the following symptoms: Pulse quick and weak ; breathing slightly stertorious ; mucous membranes of a pale and dirty hue ; total loss of appetite, and mouth very fœtid. I ordered carbonate of ammonia and whisky, the application of an irritant to the chest, and a repetition of the dose at 2.30 p.m. At 5.30 I found him nearly pulseless, breathing heavily, and very restless, but with no absolute abdominal pain. I gave a guarded opinion that the horse had eaten some deleterious matter, ordered more carbonate of ammonia and whisky, and applied mustard to the chest, the legs to be rubbed and bandaged, and the body well clothed. At 9 o'clock he was pulseless, nostrils dilated, body in cold sweats ; and while I was watching his movements, he suddenly pitched forwards with the nose doubled under the sternum, and lay in an unconscious condition, straining violently, eructating fœtid gas, and passing flatus ; he died about 9.30 p.m. in convulsions. On *post-mortem* examination, at 10.30 a.m. next day, I observed the following facts :—The muscles pale, flaccid, and friable ; extensive inter-muscular ecchymoses ; a dirty-coloured effusion

in abdominal cavity; right side of the heart full of black fluid blood; and the endocardium purple; small recent *ante-mortem* clot in the left ventricle, the endocardium of which was ecchymosed; one lung and also a part of the liver congested; colon full of dirty fœtid fluid, which in some parts of its course was tinged with hæmatin; ileum red in colour (not inflamed), and thickened; mucous membranes covered with a thick furfuraceous deposit (degenerated epithelium); portion of villous mucous membrane of stomach thickened and of a dull red colour (intermixed with the contents of stomach I discovered quantities of the capsule of the locust bean); kidneys congested; the internal organs had commenced to decompose; the mucous membrane of larynx intensely scarlet, and like the pathognomonic scarlet colour of this part in Rabies, mucous members of congested lung turning green." Professor Walley was of opinion that these symptoms and *post-mortem* appearances were not purely to be ascribed to the irritant poisonous action of seeds of the castor oil plant in the cake, but that certain of them were referable to a degree of blood-poisoning, induced by a fermentative change taking place in the ingredients of the cake. The cake at the time had a peculiar, unpleasant odour, which it has since lost.

The CHAIRMAN observed that the first-mentioned case seemed almost unique.

A paper by Professor VAUGHAN, on the "Educational Prospects of the Profession," was deferred till next meeting, owing to the small attendance.

CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary meeting of the above Society was held on Tuesday, May 8th (instead of the 3rd. as previously announced), at 10, Red Lion Square, W.C., at 7 p.m., George Fleming, Esq., Vice-president, in the chair.

Professor WALLEY, of Edinburgh, brought a specimen of congenital malformation of the cervical vertebræ—the dentata and third cervical being fused in a sharp curve, and showing a constriction in the canal at the posterior part of the dentata; no osseous disease was apparent. The subject was a horse aged fourteen years, that was, when foaled, presented with the head first and the forelegs tucked up in the hollow of the neck. He was sold for £48, and afterwards for £8, the later purchaser working him during ten years. He had the reputation of being one of the strongest horses in Leith: during life the neck presented an extraordinary curve.

The Professor next read a paper on Cardiac Hæmatomata and Thrombi, illustrating it with specimens of *ante-mortem* clots.

The CHAIRMAN remarked upon the importance of the subject, and the little knowledge possessed upon it. It had important aspects from a legal point of view, and showed the necessity for investigating the condition of the pulse and heart when examining a horse for soundness, as the regulation of the heart's action depends upon the condition of the valves, chiefly; and from the length of time required in the formation of the tumours, also the clots, it would to a certain extent relieve the vendor of a responsibility and throw it on the veterinary examiner. It would be an improvement if the same laws prevailed here as exist on the Continent, guaranteeing the animal for only a limited period. The condition of the endocardium had probably much to do with clot formation—any roughness being likely to lead to fibrinous deposition of plastic material in a stratified form,—and if these roughnesses were about the valves the symptoms must be more marked than if they existed only on the walls, accepting the Professor's theory. He had seen many specimens, but none so large, and did not doubt their fatal termination.

The SECRETARY stated that he had, in attending some hounds in the country, the subjects of acute Pneumonia, made a *post-mortem* of one that had died three hours prior to his visit, and found a septic condition of blood, with a long continuous clot in the heart, the lungs being the worst he had seen.

Mr. HOWARD, in a case of Pneumonia that occurred in his practice some three years since, found a portion of fibrous and fatty material attached to the covering of the tricuspid valve; and shortly afterwards being called to a rabid dog, he found large clots, bearing out the Professor's views, contained in the auricle and ventricle (right side), which were fibrinous and mixed with broken-down blood; whether they were a cause of the disease or a complication, he was uncertain.

Mr. STEEL was pleased to note the stress laid upon the influence of blood affections in the formation of coagula.

Mr. BURRELL thought blood clots sometimes arose independently of disease, from accidents, etc., as pricks of nails; and in cases of weak circulation, when the valves did not get opened thoroughly, a certain amount of blood got coagulated at the rear of such valves, which, with returning health and increased flow, was carried into the circulation. It frequently happened that horses at rest exhibited no trace of heart disturbance, but after walking briskly it was perceptible enough.

The PROFESSOR related a case of a Colley dog, the subject of Distemper followed by Zymotic Pneumonia, from which he apparently recovered; but dying suddenly, it was found that a rupture of the chordæ tendinæ had ensued. There was nothing else to account for death. He referred again to the legal aspect of the subject, and hoped at no distant date for a reform in the laws of warranty.

A vote of thanks to the Professor and Chairman closed the proceedings.

Present—Thirteen Fellows and three visitors.

JAMES ROWE, JUN., *Hon. Sec.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE fifty-first quarterly meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening, May 11th, 1877, the President, Mr. Woods, in the chair. The following members were also present: Messrs. Heyes, Morgan, W., J., and T. Leather, C. W. Elam, Hutcheon, Moore, Whittle, Welsby, Rothwell, and the Secretary.

Letters of apology for non-attendance were received from Professor Walley, Messrs. Peter Taylor, T. Taylor, E. Faulkner, and W. A. Cartwright.

The minutes of the previous quarterly meeting, and also those of the special meeting, were read and confirmed.

The following new members were duly elected: Messrs. George Cave, Liverpool; W. W. Townson, Liverpool; W. J. T. Moore (Chief Inspector of the Privy Council for the Port), Liverpool; Joseph Hutchin, Woolton.

Mr. WELSBY gave the following description of a case of splenic disease, and exhibited morbid specimen relating thereto:—

"The case was that of a black cart-mare, fourteen years old, which was brought to me for treatment in July of last year. The history of the case, according to the owner, was that she had been ailing for two or three months; she was very dull, and getting thinner, with a very capricious appetite; her appearance was that of emaciation, rusty wiry coat, hide-bound, pale mucous membranes, and a general anæmic condition. In my examination I found a diseased molar tooth, which I extracted, and prescribed tonics, nutrients, and stimulants.

"In a fortnight or so after this she was brought to me again, very little

changed, if at all; the pulse was very feeble, about 36 beats per minute, and intermittent. From this time she remained with me until she died, which was nearly three months. I continued my former treatment, with the addition of cod liver oil, but she slowly and gradually got worse. She could only walk very slowly, and in doing so stumbled a good deal, which I attributed to loss of power and tone in the muscular system; constipated bowels, due no doubt to a want of tone in the intestinal muscular coat. She appeared very thirsty, but never took more than a couple of swallows at one time. I always found her standing—never lying down—in the same corner of the box; but the most characteristic symptom she presented, and which should not be forgotten, was that of alternately extending her fore-legs to the fullest extent and knuckling over at the fetlock joints, with her nose close to the ground. This position she would maintain, if not disturbed, for hours together.

"Venous murmurs could be distinctly heard at the breast, and particularly at the base of the jugulars—caused, no doubt, by the current of blood in its dilute and diminished condition producing vibrations and sonorous gushes, which would not be occasioned by the circulation of a fluid of greater density.

"A *post-mortem* examination revealed a beautiful specimen of pure Lymph-adenoma of the spleen, which contained many tumours, one of which was of exceeding large size, measuring fourteen inches in circumference."

In the discussion following on this case, several members related cases of excessive enlargement of the spleen, but no one present had met with a similar case to Mr. Welsby's.

Mr. MORGAN regretted the absence of Mr. W. A. Cartwright; for that gentleman had many years ago published cases and remarks upon some diseases of the spleen.

With regard to the functions of the spleen, Mr. REYNOLDS considered that, under ordinary circumstances, it was instrumental in regulating the quantity of red corpuscles of the blood circulating in the systemic vessels.

Mr. WELSBY related a case of fractured lumbar vertebræ, wherein the subject travelled a distance of four miles after the accident.

Mr. REYNOLDS related a case of ruptured aorta.

The PRESIDENT gave a description of a case of Cyanosis in a foal now under his care. The symptoms presented were semi-coma, accelerated respiration, coldness of surface of the body and extremities, bluish colour of the visible mucous membranes, especially the buccal membrane, and inability to retract the tongue when withdrawn from the mouth. The symptoms were scarcely apparent when the subject was standing, but they became much intensified on the animal lying down.

Interesting discussions followed the relation of the above cases.

It was decided to hold a meeting of the Association on Thursday, July 12th next, and to invite the attendance thereat of members of the Yorkshire, Manchester, and Midland Counties' Associations.

An executive committee was formed to carry out details for the proposed meeting, and to make arrangements for a dinner to take place after it.

RICHD. S. REYNOLDS, *Hon. Sec.*

PATHOLOGICAL SOCIETY OF LONDON.

Alterations in the Nerve Structures in Hydrophobia.

AT the meeting of this Society held in May, Dr. GOWERS showed an extensive series of microscopical sections, exhibiting the Changes in the Medulla Oblongata and Spinal Cord in four cases of Hydrophobia—one of which occurred at Hertford, another at Sheffield, and two in London. The changes

found resembled in the main those which have been described by Benedict as occurring in the convolutions of the brain of the rabid dog; and by Dr. J. Coats in the lower centres of man. In all four cases the vessels of the grey matter were greatly distended,—the distension being greatest in the medulla, near the grey nuclei, in the lowest part of the fourth ventricle. In three of the cases the larger veins in this position presented aggregations of small cells within the perivascular lymphatic sheath. These were in some cases as a single layer; in other cases densely packed, so as to compress the vessel they surrounded. In a few places these cells extended beyond the limits of the sheath. In some parts similar cells were scattered through the tissue among the nerve elements, and in some places—chiefly in and near the hypoglossal nuclei—there were dense collections of these cells, constituting, in fact, "miliary abscesses." Similar smaller collections were seen among the fibres of origin of the hypoglossal and glosso-pharyngeal nerves. Adjacent to many vessels were areas of granular degeneration. In two of the cases many of the larger vessels, chiefly veins, contained clots, parts of which were evidently of *ante-mortem* formation, portions of the clot being different from the rest, darker, granular, or spongy in aspect. By some of these the appearance of embolism was closely simulated. Attention was drawn to the indications of formation *in situ* afforded by the gradation between the normal and the altered clot, and by the curved lines of pressure to which the clot had been exposed immediately after its formation. One specimen presented thickening of the inner coat of a vein opposite the older part of a clot, and the clot was reduced in size correspondingly, if formed secondarily to the change in the inner coat of the vein. In this vessel there were round cells in the perivascular sheath, and leucocytes accumulated within the old clot, and within the substance of the swollen inner coat,—affording strong evidence that the cells outside were also migrated corpuscles. The nerve-cells presented comparatively slight changes, being merely slightly swollen and granular in some places, and surrounded with granular degeneration here and there. These changes were most intense in and about the hypoglossal, pneumogastric, and glosso-pharyngeal nuclei; slighter in the nuclei of the auditory, facial, and fifth nerves; slighter also in the cord; and still slighter in the upper part of the pons. Dr. Clifford Allbutt had also found less definite changes most distinct in the medulla. In Dr. Gowers' cases, the change reached its maximum in the region of the "respiratory centre" in the medulla, which includes that prolongation downwards of the facial nucleus which subserves the movement of the lips. The paroxysms of spasm of Hydrophobia are paroxysms of respiratory spasm. In the case in which the change in the respiratory centre was most intense, the paroxysms consisted of spasm of the diaphragm, and an inspiratory effort in which the clavicles almost touched the lower jaw, and the lips were pressed against the teeth. Further evidence of the over-action of the hypoglossal nucleus, in which the changes were so marked, was afforded by one case in which a noise as of the tongue being smacked against the roof of the mouth occurred at the commencement of each spasm. Dr. Gowers concluded by alluding to the difficult question of whether these vascular changes are the initial lesion in the nerve-centres, or are secondary to the irritation of the nerve-elements by the blood poison. It was certain that embolism played no part in the process. The coagulation in vessels was also not essential; while in one case the absence of cell-infiltration showed that dilatation might be the only morbid state of the vessels. On the other hand, the changes in some of the clots, in cases in which the symptoms lasted only three days, showed that considerable vascular changes must have occurred very early in the disease.

Dr. CRISP asked whether his researches had led Dr. Gowers to believe that there was any special lesion characteristic of Hydrophobia. Dr. Gowers replied in the negative.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the monthly council meeting held on June 6th, Lieutenant-General Viscount BRIDPORT stated that Professor Brown had sent the accompanying report to the Committee, detailing the circumstances attending the only two cases of Cattle Plague which had occurred since their last meeting. The Committee, in presenting this statement to the Council, ventured to express their satisfaction with the procedure of the Privy Council, and their belief that the present state of things justifies a hope that the country may shortly be declared free of Cattle Plague.

Report of Professor Brown.

"Two outbreaks of Cattle Plague have been reported since the last meeting of the Veterinary Committee on May 1st: one in Lincoln Street, Hull; and the other in Whitechapel. In both cases the evidence was of a character to justify a doubt as to the true nature of the disease.

"The outbreak at Hull was reported to the Veterinary Department on May 5th, and Mr. Duguid proceeded to investigate the case without delay. According to his report, the symptoms exhibited by the diseased animal were not sufficiently marked to enable him to form an opinion, but after a *post-mortem* examination he was satisfied that the disease was Cattle Plague; the four cows which were in the shed with the diseased animals were immediately destroyed, and the premises declared infected. An inquiry was instituted at once, but nothing was discovered which in any way connected the outbreak with centres of infection which had previously existed in the borough. No case of Cattle Plague had been reported in Hull for a period of six weeks, and a careful inspection of all the cow-sheds did not result in the discovery of any circumstances which would lead to a suspicion that a fatal disease had existed during that interval. If Cattle Plague had prevailed, some of the sheds would certainly have been found empty. The cow which was reported ill on May 5th was bought of a dealer on April 22nd, and two other cows which were brought into Hull with her remained healthy. The four cows which were in the shed with the diseased cows from Wednesday, May 2nd, when the first signs of illness were observed, to Sunday, May 6th, showed no indication of being infected with Cattle Plague, and no further outbreak of the disease has occurred in Hull.

"The outbreak in Baker's Row, White's Row, Whitechapel, has excited a good deal of attention, in consequence of the statement which was made at a meeting of the Board of Works, by the Chairman of the Cattle Plague Committee, to the effect that the Board's inspector had reported the existence of Cattle Plague, while the officers of the Privy Council considered the disease to be Pleuro-pneumonia. The attention of the Board of Works has been called to the fact that the telegram which was sent by their inspector to the Veterinary Department contained no reference to Cattle Plague, but merely stated that some animals required to be inspected, and that the carcase of one of them, which had been slaughtered the previous day, was at Mr. Cave's, butcher, Dempsey Street, Whitechapel. The chief inspector at once proceeded to the butcher's premises, and was shown the carcase, which was dressed in the ordinary way, and at the same time some lungs were produced, in one of which (the left one) the disease, Pleuro-pneumonia, had

advanced to such an extent that nearly the whole of the structure was implicated.

"On visiting the shed whence the animal had been removed, the chief inspector found three cows presenting symptoms which led him to suspect Cattle Plague, and he therefore placed the premises in charge of the police, and took possession of the carcase at the butcher's ; the hide and offal had been removed, and it did not appear that anything had been disinfected.

"The three cows in the shed in White's Row, and two others, which the owner had kept out of the way in another part of the premises, were subsequently seen by Professor Simonds ; and although the evidence was not quite satisfactory, it was deemed advisable to declare the existence of Cattle Plague, and the animals were accordingly destroyed. It may be observed that Pleuro-pneumonia was declared by the inspector of the local authorities to exist in the premises in White's Row on April 24th, on which date there were ten cows in the sheds.

"For some weeks past the inspectors of the Privy Council have been engaged in directing the cleansing and disinfection of the premises in which Cattle Plague had existed ; this work is now completed. It is, however, intended to keep all these premises under observation for some time after the introduction of fresh stock."

This report was adopted after the following discussion had taken place.

Lord POWIS mentioned that the restrictions which had been imposed in many cases were now being removed, in consequence of the cessation of fresh cases of Cattle Plague.

Lord ESLINGTON, M.P., and Mr. WAKEFIELD, having asked for information in reference to the Whitechapel case of alleged Cattle Plague,

Professor SIMONDS stated that in consequence of what had been considered the doubtful character of the Whitechapel case, he had been requested to examine the animals as well as the carcase of one which had been slaughtered. This he was shown, together with the lungs, which were distinctly affected with Pleuro-pneumonia, but he had great doubt whether the latter had been taken out of that carcase. On visiting the animals which were ill in the shed, he found there three cows, two of which were unwell, while the other was perfectly healthy. One of these animals gave unmistakable evidence of disease of the lungs, and the other unhealthy animal gave indications of Cattle Plague. The animals were placed under the care of a policeman until the following day, when he again visited the shed, and found that two other cows had been secreted—*i.e.*, had been taken from the animals he had seen the previous day, and put in another part of the premises, where one would scarcely have supposed any man could put two cows. This made him more suspicious as to what was going on, and on examining these two cows, he found evidence of serious illness, and symptoms allied to those of Cattle Plague. At this time there were only four animals left—one he had seen on the previous day being now dead. This animal was the one to which he had referred as exhibiting symptoms of disease of the lungs. He proceeded to make a *post-mortem* examination ; and the indications that examination afforded were such as would only lead one to suspect the existence of Cattle Plague in the remaining animals. Under the circumstances, it was deemed right and prudent to take the same course as would have been adopted if there had been no doubt that the disease was Cattle Plague.

Mr. JABEZ TURNER wished to ask Professor Simonds for an expression of his opinion whether it was possible for Cattle Plague and Pleuro-pneumonia to exist in the same animal at the same time. He had heard it frequently stated in the country that many animals which had been killed as suffering from Cattle Plague were in reality only affected with Pleuro-pneumonia.

Professor SIMONDS said he had no hesitation in answering the question. There could be no doubt whatever that the two diseases could exist in an animal at the same time. An animal suffering from Pleuro-pneumonia would sometimes live two or three weeks, and, if exposed to the infection of Cattle Plague, it would very likely take it, and die from Cattle Plague, and not from Pleuro-pneumonia. Animals also in which the infecting materials of Pleuro-pneumonia were incubated were equally liable to the infection of Cattle Plague.

The Committee had also received the following report from their inspector, Mr. Duguid, in reference to the Hull case:—

"At the request of Professor Brown I visited Hull on May 6th to examine a reported case of Cattle Plague on the premises of Mr. Kirby, Lincoln Street.

"The animal was one of a stock of five cows, and had been examined by the local inspector, Mr. Freeman, and also by another veterinary surgeon, and pronounced to be suffering from Cattle Plague.

"The cow showed some, although not all, the symptoms characteristic of the disease, and I had some doubt whether she was really suffering from Rinderpest or not; but on making a *post-mortem* examination my doubts were removed, and I then confirmed the opinion of the local inspector, and the other four animals in the shed were slaughtered by order of the local authority.

"The cow had been bought from a dealer only a short time previous, but the fact that two other cows that had been brought into Hull along with her remained healthy, precludes the idea of the contagion being brought by her into the shed.

"A period of six weeks had elapsed since a case of Cattle Plague had been seen in Hull, and no light has as yet been thrown on the source of the contagion."

Mr. DUGUID presented the following report:—

"*Pleuro-pneumonia Experiments.*

"In the report presented to the Royal Agricultural Society in December last on the Pleuro-pneumonia experiments being conducted at the Brown Institution, it was stated that as soon as all the animals had been inoculated, or exposed to the contagion of Pleuro-pneumonia by contact with the organs of diseased animals which had been slaughtered, they would then be subjected to cohabitation with animals suffering from the disease. The existence of Cattle Plague in the Metropolis, and the consequent necessary restrictions on the movement of animals within the metropolitan area, have for some time past precluded the movement of the experimental cattle into infected sheds, and therefore the final and important part of the series of experiments has been delayed. Professor Brown has kindly offered to assist in obtaining infected premises for this purpose as soon as the Cattle Plague regulations cease, and it is to be hoped that in a short time the present series of experiments will be concluded.

"The whole of the animals have been inoculated with the exudation liquid obtained from Pleuro-pneumonia lungs, most of them in more than one way; and some have, in addition, been brought in contact with the lungs of diseased animals that had been slaughtered while suffering from the disease. None of them have become affected with Pleuro-pneumonia as the result of these inoculations, and with one exception they have all remained in good health. The exception referred to is the case of one cow, which died on the twenty-fourth day after inoculation; but the cause of death was not Pleuro-pneumonia.

"*Foot-and-mouth Disease.*

"Although at first some difficulty was experienced in communicating this disease, four of the experimental animals have become affected with it by feeding them with hay moistened with the saliva of diseased animals. And had the virus of Foot-and-mouth Disease been more readily obtained, the others would in all probability have been infected before the present time. The first opportunity that offers, they will be subjected to the influence of the virus."

Cattle Plague Evidence.

Mr. RIDLEY, M.P., reported that the Committee met on Wednesday, May 2nd, at two p.m., when he was elected Chairman, and the Committee roughly sketched the following programme of what they considered should be the heads of inquiry by the Select Committee, and resolved to inform themselves as far as possible of the decision come to by that Committee as to the scope of their inquiry, and the nature of the evidence they intended to take, with a view to considering their own further action :—

"A. *Foreign Live Stock.*

"Principal sources of supply of foreign live animals.
"Regulations in different countries with reference to exported stock.
"Manner in which those regulations are carried out at ports of embarkation.
"Proportion of diseased cargoes from each country.
"Method of transit from exporting to importing countries.
"Reception and treatment at ports of debarkation.
"Facts relating to the recent outbreak of Cattle Plague.
"Importation of Pleuro-pneumonia.
"Importation of Foot-and-mouth Disease.
"Estimate of loss in home production of meat and milk.
"Deterrent effect of imported diseases on the home breeding and feeding of stock.

"B. *Foreign Meat Supply.*

"Existing supply.
"Comparison of the condition of foreign, American, and Scotch meat.
"Recent development of the American trade, and probability of summer supply.
"Effect on the price of meat.
"Probabilities of future meat supply, especially what proportion of foreign live stock would be likely to be sent here as dead meat if their importation as live animals were prohibited.
"Importation of hides, horns, etc.
"Regulations that may be necessary to prevent importation of diseases with hides, etc.

"C. *Amendment of the Act of* 1869."

Since this time the Committee had been favoured, by the courtesy of the Chairman of the House of Commons Committee, with a copy of the shorthand writer's notes of the evidence given before that Committee. The Committee again met yesterday (Tuesday, 5th inst.), and discussed the various heads of their programme, in connection with the evidence already given before the House of Commons Committee. They made one or two additions to that programme, and agreed upon the names of witnesses whom they thought it would be desirable should be examined by the Select Com-

mittee in case it should be necessary to supplement the evidence brought from other sources before them. In view of some necessary clerks' work, in digesting some of the evidence which might be brought forward, the Committee asked for a grant not exceeding £25, to be placed in the hands of the Secretary.

This report was adopted.

Jurisprudence.

THE FLESH OF TUBERCULOUS CATTLE AS FOOD.

AT the Borough police court, Rotherham, on Friday, the 28th April, before the Mayor (B. E. Chambers, Esq.), and H. Jubb, Esq., Mr. Packwood, on behalf of the urban sanitary authority, made application for an order for the destruction of the carcase of a beast which was on view in the adjoining room, belonging to Mr. W. Downs, butcher, Effingham Street, Rotherham. Mr. F. Parker Rhodes defended.

Mr. Packwood stated that on the previous Wednesday the attention of the Inspector (Mr. Parkin) was called to the carcase of a beast, which was in the slaughterhouse of Mr. Downs. He informed Dr. Hardwicke, the medical officer of health, and other gentlemen; and Dr. Hardwicke, Mr. Campsall, veterinary surgeon, and Mr. J. Wood, meat and food inspector, Sheffield, examined the carcase; and in their opinion, although the carcase might present a healthy appearance, the animal had suffered from a wasting constitutional disease. The heart was studded with tubercles, and the beast had also suffered from Pleurisy on the right side, and the liver was also studded,—from which they came to the conclusion that the meat was unfit for human food. There would be some contention as to whether the meat of an animal suffering from this disease would be really unfit for human food, but he would ask the Bench, after hearing the evidence, to make an order that the carcase should be destroyed. He did not ask a penalty, as the defendant had not acted *malâ fide*, but had bought the animal at the Wakefield market, paying a good price for it, and believed it to be perfectly sound.

Mr. Chas. E. Parkin, Inspector of Nuisances for the urban sanitary authority, said that on the 25th of April his attention was called to the carcase of a beast in the slaughterhouse. As far as the carcase itself went, he had no fault to find, except that it showed traces of disease by the adhesion of the lungs to the right side. On the right side there was a considerable amount of scrofulous deposit. The heart was entombed in a diseased case. The liver was diseased; and after examining it carefully, he saw that the disease had made such headway with the lungs, heart, and kidneys, that he thought it his duty to call in the medical officer of health, the veterinary surgeon, and other practical witnesses,—all of whom examined the carcase. —Examined by Mr. Rhodes: He (Mr. Parkin) would not like to pass an opinion as to whether the meat was fit for food or not. He had never seen so bad a case. The livers of Irish cattle were frequently affected in a similar manner.

Dr. Hardwicke, the medical officer of health, said that on the previous day he was called in by Mr. Parkin to see the beast in question. He examined the carcase, in company with Mr. Campsall, Mr. Parkin, and Mr. Wood, and found the lungs studded with tubercles, and a good deal of tuberculous deposit in the pericardium. There was a good deal of the

deposit in the tissue of the liver, and he also found a considerable amount inside the right ribs, some inside the left ribs, and also in the mesentery—the connecting membrane of the bowels. He should certainly consider it to be suffering from a constitutional disease. He agreed with Mr. Hill (an authority on the question quoted by Mr. Packwood) that the flesh of an animal suffering from Tuberculosis, Scrofula, or Consumption, was unfit for human food when it reached the extent of the one in question. If it had gone on he should consider that the animal would have died from Consumption. There was not much wasting, but the disease would make the meat unfit for human food.—By one of the Bench : He could not tell how long the animal had been suffering, but it would be months, perhaps years.—By Mr. Rhodes: Beyond what he had described there were no other indications which could be observed by the eye in any other parts of the body. The disease began with the internal organs, making the blood of the system poorer, extending to the different parts of the body; and the result was a wasting away, and in after time death. It was possible, in a very bad case, to find scrofulous disease in the muscular structure of the body. The muscular structure looked pretty healthy. He gave his opinion as to the general appearance of the internal organs. If a person ate a portion of the meat, the active agent which would produce disease in the human being was tubercle, or tubercular deposit. It was possible that there should be such a disease in the heart and lungs without being in the flesh, as it attacked the muscular tissues last. He had not examined the carcase microscopically, but he had examined it sufficiently to establish the fact in his own mind that to eat of the flesh would be full of risk, as the meat was unfit for human food.

Jonathan Wood, meat and food inspector for the borough of Sheffield, said that he went into the slaughterhouse and examined the carcase. If he had seen three quarters *only*, it would not have challenged his attention, and he would have taken no notice of it. He thought it decent meat; but when he looked at the fourth quarter, he saw that adhesion had taken place. The heart was encased *very* thickly in scrofulous matter. He got a knife and cut into it, but had some difficulty in doing so, as it had become ossified. The lungs were one mass of tubercular deposit, not of the ordinary "grapy" kind, but assuming a liquid form of the consistence of "batter-pudding." There were two kinds of hoose—the wet and the dry hoose. In the carcase in question it was the wet hoose.

Mr. Campsall, veterinary surgeon practising at Rotherham, said he examined the carcase with the other witnesses. There was a large quantity of tubercular deposit in the tissues of the pericardium, liver, and lungs; also some tubercles at the back part of the tongue. There was Pleurisy on both sides, but particularly on the right side, which was studded with tubercles. He considered the meat to be unfit for human consumption. He considered the animal had suffered from a constitutional hereditary disease, from which it could not possibly recover, and that it was only a question of time ere it would waste and die. If the meat itself was free from tubercular deposit, he did not think that it could be eaten with safety.

George Wildsmith, butcher, Rotherham, said he had been a butcher for twenty years. He had no doubt that there was disease in the lungs and heart of the beast in question. In answer to Mr. Rhodes, he said he cut up hundreds of beasts, and had "skinned" the ribs of many. He should have done that if it had been his.

This concluded the case for the applicants, and

Mr. Rhodes, in defence, said he felt that the case was one of no little importance, and would have a considerable effect on the supply of meat in the town and neighbourhood. Beasts suffering from the same kind of disease

were killed not only in Rotherham, but in every town throughout the kingdom, and formed a very large proportion of the cattle which went into the market. He believed he was within the mark when he said that about ten per cent. of the beasts suffered from that disease. According to Dr. Hardwicke's evidence, if the tubercular deposit did not extend into the meat, it might be eaten with impunity. Dr. Hardwicke said it was unfit for food because it was dangerous, but there was no positive certainty that disease would follow the eating of the meat. Before they destroyed any man's property, they must be satisfied that there was absolute danger. He contended that the applicants had not disclosed such a case as to call upon the Bench to destroy the carcase as being unfit for human food. They must show that danger would arise from the eating of the meat. The carcase had been examined microscopically, and he should call Dr. Branson and Dr. Cobban, who would say that the meat was perfectly fit for food, and that only the internal organs were diseased. All the butchers would say that this kind of disease was prevalent to a great extent in cattle, and it was merely a question of degree. The beast had been bought at the Wakefield market, and a fair price had been paid for it.

Dr. Branson said he had examined and submitted certain portions of the animal to microscopical observation, and he agreed with Dr. Hardwicke and Mr. Campsall that the internal organs were suffering from the disease. In his judgment the meat of the beast, apart from the internal organs, was not affected with the disease, and was quite fit for food. It was quite possible for tubercular deposit to exist to a large extent in the internal organs, and yet not exist in the other portions of the carcase. The meat might be eaten in perfect safety. He examined a number of portions of the carcase indiscriminately, and in none, except in the internal organs, did he find any tubercular deposit.

Mr. Packwood.—"What experience in this direction have you had in your professional career?"

Witness.—"So far as cows are concerned, this is my first experience."

Dr. Cobban, medical officer for the rural sanitary authority, said he had examined the carcase of the beast in question, although not microscopically. There was no existing disease in the carcase, except that which was present in the internal viscera. He took one portion of the lymphatic tissues home with him and examined it, and found some traces of disease in it, but none in the muscular tissues. He also satisfied himself that the disease was not of recent standing. The effect on an animal suffering from Tuberculosis would be a gradual wasting away. An animal could be suffering from tubercles in the liver and heart, and yet the blood could be not impregnated.

The magistrates retired, and subsequently gave their judgment in favour of the defendant, remarking that there was not sufficient evidence to warrant them in condemning the meat as unfit for human food.

[This case has given rise to a considerable amount of excitement and discussion in Rotherham, and we have been asked to express an opinion as to whether the flesh of animals affected with Tuberculosis is suitable for human food. This is a question which properly should be put to the Veterinary Department of the Privy Council; but as that Department only makes itself acquainted with three or four diseases of animals, and leaves other serious scourges out of sight, the public have to trust, for the most part, to those who know little if anything of animal disorders, for sanitary information which should certainly be afforded by the veterinary profession.

Tuberculosis is evidently largely on the increase, and there appears to be good evidence to prove that it is transmissible, not only among bovine animals by cohabitation, but to other animals by inoculation, and by the ingestion of

tubercular matter, as well as by uncooked milk from diseased cows. If several species of animals can be so infected, why not mankind? Thorough cooking may, of course, prove a safeguard against danger; but we must confess that we are averse to sanctioning the issue of the flesh or produce of tuberculous cattle as food, and energetically enter our protest against that of animals in a cachectic condition being so utilised. The apologists for the use of this flesh assert that because the disease is so common, it would be wasteful to condemn so much food; but this argument will not for a moment bear examination. The good condition of an animal is not always a guarantee as to the soundness of its flesh, as we have seen cattle tolerably fat and healthy-looking, yet which, when killed, were found to be seriously affected with Tuberculosis. In one case the deposits were widely diffused, one large mass being lodged in the lymphatics of the neck. This is a blood disease, and must, more or less, affect all the tissues, secretions, and excretions. The glandular structures are particularly liable to be affected; and in the present number of the *Veterinary Journal*, Mr. Hill gives two most interesting cases, which have their value for sanitarians. We hope, in an early issue, to give a record of a large series of very valuable experiments performed on animals of different species, and which prove, in the most convincing manner, the transmissibility of the malady by inoculation and ingestion.

With regard to our opinion as to the utilisation of the flesh of tuberculous animals as food for mankind, we are ready to confess that we do not look favourably on allowing such flesh to be eaten, and should have no hesitation in condemning the carcases of animals in which there was any tendency to diffuse Tuberculosis, or which offered signs of tubercular cachexia.

In this we find that we are supported by the opinion of the Medical Department of the Local Government Board, furnished to Dr. Hardwicke, of Rotherham, in 1873.

(COPY.)

"Local Government Board (Medical Department), Whitehall, S.W.,
"*20th September*, 1873.

"Sir,—I am directed by the Local Government Board to acknowledge the receipt of your letter of the 13th inst., and to state, in reply to your inquiry, that they are advised that the carcase of a cow, of which the lungs are full of tubercles—the liver also containing tubercles—cannot properly be used for food for man.

"Your obedient servant,
"EDWARD C. SEATON.

"J. Hardwicke, Esq., M.D., Medical Officer of Health, Rotherham."]

Army Veterinary Department.

Gazette, May 22.

Veterinary-Surg. of the First Class John Tatam, from Royal Artillery, to be staff Veterinary-Surg., *vice* William Varley deceased.

Gazette, May 29.

Veterinary-Surg. John Field, half-pay, resigns his commission.

Gazette, June 8.

1ST REGIMENT OF DRAGOON GUARDS.—Veterinary-Surg. of the First Class L. Byrne, retires on half-pay.

W. S. Adams, Royal Artillery, is to officiate as Veterinary-Surg. to the Remount Depôt, Oosoor, during the employment of Veterinary-Surg. Shaw on other duty.

Obituary.

THE following deaths have been reported to the Registrar of the Royal College of Veterinary Surgeons :—

	GRADUATED
Mr. Alex. Smeaton, Pathhead Ford, Edinburgh . .	April, 1834.
„ J. Whitmore Garrad, East India Company's Service	May, 1853.
„ H. C. Hulse „ „ „ „ .	Feb., 1828.
„ R. Willis „ „ „ „ .	May, 1833.
„ G. Corbett, Worcester	May, 1822.
„ G. T. Vesey, Christchurch, Hants	April, 1872.

The Registrar expresses his regret that the name of Mr. Thos. Greaves, jun., of Burnley, should have appeared in our last obituary list. The mistake arose in consequence of a "returned letter" addressed to Mr. Greaves, having been inadvertently marked "deceased" by the Post-office authorities.

The French veterinary schools have been very unfortunate lately, those of Lyons and Toulouse having lost two eminent teachers—Rodet and Gourdon ; and now we have to record the death of M. Serres, who belonged to the last-named school, and was Chief of the Clinical Service and Professor of Surgery. Professor Serres had published numerous *mémoires* on pathology, surgery, and hygiene, as well as reviews in the journal of the Toulouse school, and was the author of a treatise on the castration of the domesticated animals. His untimely decease appears to have caused universal regret among our French colleagues, and especially among those in the south of France.

Notes and News.

DOG LICENCES.—By a return dated the 16th of April, 1877, and just issued to the House of Commons, it appears that in 1867 the number of licenses granted for dogs was 828,320, while the number assessed to the dog-tax was 445,656—a little more than half. At the present time it is reckoned that the number of dogs for which licences have been granted is about one-third more than the number assessed to the dog-tax.

CATTLE SLAUGHTERED IN EUROPEAN RUSSIA.—An arrangement has been made, which is to continue in force for three years, for the compensation by the State of owners of cattle which may be compulsorily slaughtered within the boundaries of European Russia, owing to the prevalence of Cattle Plague. The money required for this purpose is to be raised by a special tax upon all descriptions of draught animals.

HORSES IN EUROPE AND AMERICA.—The number of horses in the various countries of the European Continent and in the United States has been estimated as follows :—In Russia, 16,160,000; North America, 9,504,200 ; Germany, 3,352,231 ; Great Britain, 2,790,851 ; France, 2,742,738 ; Austro-Hungary, 3,569,434 (of which 2,179,811 belong to Hungary) ; Italy, 657,544 ; Norway and Sweden, 655,456 ; Spain, 382,000 ; Denmark, 216,570 ; Belgium, 272,163 ; Holland, 260,056 ; Switzerland, 100,934 ; Greece, 98,938 ; and Portugal, 79,616 ; making a total in the countries mentioned of 40,854,840. The proportion of horses to each thousand of the population is 227·05 in Russia, 244·16 in America, 175·55 in Denmark, 146·99 in Hungary, 114·88 in Sweden,

86·10 in Great Britain, 81·64 in Germany, and 18·25 only in Portugal. Of mules there are found 1626 in Germany, 303,775 in France, 214,935 in Austro-Hungary (of which 3266 are in Hungary proper), 292,868 in Italy, and the large number of 6,665,472 in Spain.

TRICHINOSIS IN SAXONY.—This parasitic disease has shown itself with renewed intensity at Neugersdorf, in Saxony. On October 26th, 1876, the district physician was officially warned that Trichinosis had appeared in his locality, and he soon had reason to confirm the diagnosis of the physician of Neugersdorf. Forty-five persons were attacked, and the principal symptoms were œdema of the face, pains in the neck, arms and legs, anorexia, and sleeplessness. On September 22nd, the disease showed itself in the *clientèle* of Dr. Ruppreiht, at Hettsledt. The outbreak ran through its different phases in fourteen days, without any serious results. The two patients had each eaten sixteen grammes of the infected flesh on August 26th. The number of trichinæ in the flesh was estimated at one to every centigramme, so that the patients must have ingested about 1600 of these creatures. Hence it may be computed that each of them harboured 1,600,000 trichinæ, if we admit that in the four weeks the nematode entozoa could be multiplied a thousand times. As it requires 1,000,000 trichinæ to produce the slightest symptoms of Trichinosis, the manifestations of infection could not be declared before three weeks after eating the flesh. The disease was recognised twenty-five days after the trichinosed pork had been partaken of, and the symptoms—the rheumatismal form—continued for fourteen days. The butcher who sold the flesh was condemned to a month's imprisonment.

SALICYLIC ACID AND SWINE PLAGUE.—Haubold, a Saxon veterinary surgeon, successfully employs this acid internally, and also in the form of enemas (1 to 250 of water), in the treatment of this destructive malady. Brauer also employs it in the treatment of Auricular Catarrh in the dog, along with sulphuric ether. Five centigrammes of the acid to five grammes of water are sufficient for one ear.

LYONS FACULTY OF MEDICINE.—By a decree of April 24th, 1877, Professor Chauveau, Doctor of Medicine of the Faculty of Paris, Director of the Lyons Veterinary School, Corresponding Member of the Institute, and Associate of the Academy of Medicine, has been named Professor of Experimental and Comparative Medicine in the newly-created Faculty of Medicine and Pharmacy of Lyons.

VETERINARY HONOURS.—The Academy of Sciences of Paris has awarded the veterinary Professor A. Sanson 1500 francs for his "Experimental Researches on Pulmonary Respiration in the Larger Domestic Mammifers." —The same learned corporation has awarded the experimental physiology prize to M. Morat, professor of physiology at the Medical Faculty of Lille, and M. Toussaint, professor of anatomy and physiology at the Toulouse Veterinary School.—The Veterinary Institute of Dorpat, Russia, has bestowed its honorary diploma on a select number of veterinarians in France, Germany, Italy, and Belgium.

RABIES FROM THE BITE OF THE SKUNK.—Colonel Dodge, in his very instructive and interesting work, the "Hunting Grounds of the Great West" (London, 1877), speaks of the skunk, a carnivorous creature and a denizen of the North American plains, and alludes to its boldness in venturing into camps and tents in search of food while the inmates are asleep; should nothing better be in its way, it will commence devouring the hand, face, or any uncovered part of the sleeper. "The bite in itself would be of but little account, but in all the country between the Republican River and the Indian

territory, it is almost invariably followed up by that most horrible of all horrors, Hydrophobia. I am convinced that the terrible disease is the natural result to man of the bite of the skunk (in the territory designated), and that, while inflicting it on the person bitten, *it does not follow that the skunk is himself afflicted with the malady.* I judge this to be the case, firstly, from the fact that skunks are very numerous in the valleys of the Arkansas and its tributaries; whilst the number of men bitten each year with fatal result is so great and so widely separated, both in location and time, as to indicate an epidemic amongst the skunks which, if each were equally rabid, would soon exterminate the whole race. Secondly, from the actions of the biting animals. The bite is not the senseless snap of a rabid animal, but is the result of appetite. The skunk comes into camp in search of food, deliberately sits down on the hand or face of a man, and begins eating. If disturbed, he cocks his tail and stands on the defence; but if a fire is made, or a candle lit, or he be alarmed by noise and bustle, he scampers off into the darkness, to return again when all is quiet. Thirdly, though I have seen many dogs bitten by skunks, I have never known a dog or other lower animal to go mad from such a bite. The crowd of buffalo hunters that flocked to the plains in 1872-3-4 suffered greatly from skunk bites. During 1872-3, while stationed at Fort Dodge, I knew by report of sixteen cases, every one of which proved fatal."

He mentions that an assistant surgeon at Fort Hays treated eleven cases of skunk-bite, ten of which resulted in Hydrophobia, and were fatal.

From inquiries instituted, he is inclined to believe that this singularly fatal result of skunk-bite is confined to the valley of the Arkansas.

Allusion is also made to wolves frequently becoming rabid on the plains, and that when so they rush into the Indian villages, make no attempt to leave, but attack every one. The Indians assert that no person ever recovers after having received the smallest scratch from the teeth of the rabid animal. Rabid wolves are most frequent in February and March. "They (the Indians) make no attempt at treatment; and one or two instances were related where an Indian, on being affected with the hydrophobial spasms, threw himself into the water and was drowned."

HYDROPHOBIA.—Two deaths from Hydrophobia have occurred at Aldbourne, near Hungerford, recently. During the month of April a dog belonging to a dealer at Lambourne Woodlands, bit a cow and six dogs. One of the latter bit a shepherd named Lee, as well as the bailiff to Mr. T. Brown of Upham. Both men died on Thursday last week. The dog was shot the next day. The cow and all the other dogs which were bitten by Horn's dog died from the effects of the bites.—A fawn-coloured greyhound presenting symptoms of Rabies has been shot at Erith. The animal, first noticed at Woolwich, ran through the streets of Plumstead, and, before being captured at Erith, bit two other dogs and twenty persons on the road. Turning up at the ballast wharf of Mr. Parish, of Erith, the dog inflicted seven lacerated wounds upon Mr. Parish before he could extricate himself from it. It then ran into the shop of Mr. Astin, and bit his assistant.

Correspondence.

A HOWL FROM THE "SERVICE."

To the Editor of the VETERINARY JOURNAL.

SIR,—Can you tell us when we poor army veterinary surgeons are going to see anything done for us, or are the authorities prolonging the agony until the Department dwindles away, as it will rapidly do, unless our pay and position be greatly improved? Here we are in exactly the same state, with regard to pay and retirement, as we were nearly twenty years ago—our last warrant being of the antiquated date of 1859! While other departments in the army have had warrant after warrant, each one giving an additional advantage in one way or another, we poor wretches have remained exactly as we were, and apparently will continue in a state of "as you were" for some considerable time longer. It is really too bad of "the powers that be" to play so cruelly upon men's feelings. We have been called a "long-suffering department," and, by Jove, I think we have earned the title. Why, it is more than a year since Mr. Hardy said he was anxious to see our position improved! By the way, I wonder how much longer the actuaries he mentioned will be so terribly employed, that they cannot afford to expend a few days upon our small department?

We, out here in India, have heard of various changes said to have been proposed and rejected, or set on one side; but from being so widely separated from one another, real departmental news becomes greatly distorted. It is very aggravating to be, as it were, so much in a fog regarding everything going on at home; so pray, kind friends, enlighten us.

I am, etc.,

Bengal, 26*th April.* "A HOWLER."

[Our correspondent has every reason to be dissatisfied, and he is no exception to the great majority in the Department. But we hope some improvement will soon be effected, and we have reason to know that the Principal is doing all he possibly can to expedite matters, and to move the torpid beings who appear to have been born only to act as depressors or checks to the promotion of just claims. The profession has the adjustment of grievances very much in its own hands; and when it knows that it is impossible for its members in the army to live respectably without spending £100 or £200 a year of their own private means in the service of a generous country, or suffer expatriation in the sweltering plains of India in order to be able to exist (financially), we can scarcely wonder if it should be ready to give the aspirant for an army veterinary surgeon's career the advice *Punch* gave to those about to marry—"Don't." Good recruits will certainly not enter the service until their position and prospects are greatly improved. In the meantime the Service must suffer.]

CASTRATION OF CRYPTORCHIDS, AND OVARIOTOMY.

To the Editor of the VETERINARY JOURNAL.

SIR,—I have been a good deal surprised by your editorial notice of Mr. Miles' "Ovariotomy and Castration of 'Ridglings,'"—and fearing that your over-confiding nature may serve to mislead some of your readers, I hasten

to remind you of the proverbial "smartness" of the Yankee. No country but America could have "raised" a *Barnum*, no other soil could have brought *wooden nutmegs* to perfection. The fertility of the American mind is shown in all walks of life, and in none more so than in the treatment of sick and lame animals. The land swarms with "professors" who have never held chair in university or college, who are not even graduates of any seat of learning, but who will confidently undertake what you, sir, with all your "wit and lear'," would humbly decline. I can send you men by the hundred who will remove a bone, spavin, ring-bone, or splint of old standing, and leave the bone in its original smoothness and perfection; who will stop the growth of a ring-bone by cutting out its feeders in the fetlock pad; who will restore any sick cow to sound health by boring the root of the horn with a gimlet, and rubbing in peppers and other irritants; or who will recuperate the ailing hog by removing an unshed deciduous tooth which has become slightly stained with black. Nor are these wonderful achievements incompatible with brilliant success in other walks of life. Within ten miles of where I write, upon a rickety wooden shanty, hangs a signboard, rough and unplaned, but setting forth in rude and ungainly letters the inmate's occupations as follows: "Clocks and Watches repaired; Ring-bones and Spavins cured."

But to return to Mr. Miles and the cryptorchids. This gentleman, as he himself informed me, is an Illinois farmer, who has had no opportunity for acquiring a knowledge of medicine other than private study. He deserves the more credit for what he has done, and I do not seek to detract in the slightest degree from his just claims. I would merely state the facts in the case.

Cryptorchids, then, may be divided into three principal categories: 1st, those in which the missing testicle is merely arrested in the inguinal canal; 2nd, those in which the missing organ lies at the internal ring, but has a distinct connexion with the perfectly-formed scrotum through the *gubernator testis;* 3rd, those in which the testicle is retained higher up in the abdomen, and the *gubernator* is so little developed that that organ cannot be availed of for drawing it down. In many of these last cases the internal ring is closed by a firm membrane, and no scrotum has been formed. It is upon the first two classes of cases only that Mr. Miles operates.

I speak from information furnished by himself during a call he made at my office in the Centennial Live Stock Grounds at Philadelphia last autumn. In answer to my question as to what he would do in case the testicle were retained higher up in the abdomen, he confessed that "he guessed he must let those alone." Now, a large majority of even these can be reached and extracted through the inguinal ring, by first incising the occluding membrane where it exists, and then with the oiled hand in the rectum searching for the missing organ, and pressing it through the ring, or at least, bringing it in contact with the opening, so that the testis or cord can be seized from without, and their evulsion effected. This, which I have practised for the past eight years, meets many cases that cannot be castrated by Mr. Miles's method of manipulating from without only.

I forego any more minute description, to hasten the departure of this note, if mayhap it may reach you in time for the June issue; but I am just going to press with a work on castration in all domestic animals, which will give full details.

I am surprised at the neglect of this operation in Great Britain, as it has been practised in Denmark for a number of years, and has been repeatedly described in the Continental journals. Yet, if my memory is not at fault, the Danes ignore the manipulations through the rectum.

Regarding ovariotomy in cows and mares, Mr. Miles informs me that he

follows the old method of making an incision through the flank, which, as I informed him, can only be named to be condemned by all who know anything of the incomparably easier and safer operation by the vagina. The flank operation in cows and mares ought to be entirely obsolete, on account of the danger of inflammation from exposure to the air, and from contact with germs which are filtered out in passing through the vagina. Then, as regards facility, the vaginal operation can be performed with the cow standing, tied by the neck, and merely steadied against a wall by an assistant. The effect on the system is immeasurably less, as it is rare to find any interference with the appetite, the general health, or the secretion of milk, after the first twenty-four hours. Yours very truly,

JAMES LAW.

Cornell College, Ithaca, N.Y., *May 12th*, 1877.

[It was certainly far from our intention to mislead our readers with regard to Mr. Miles. We only knew for a fact that the operation he was certified to excel in, by authorities whom we believed to be competent judges, was not, to our knowledge, performed in this country; though we were well aware that it was successfully practised on the Continent. We confess that we are never above learning, even from a farmer; and though we have personally castrated large numbers of horses in nearly all climates, often under the most disadvantageous circumstances and by rough and ready methods, with a fair share of success, yet we hold ourselves open to improvement, come from whom or whence it may. Cryptorchids we have not had an opportunity of trying our hand upon.]

THE CHAIN SAW IN VETERINARY OBSTETRICS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In to-day's *Journal* appears a letter from Mr. Hoole, in which he is desirous to know whether we could manufacture a chain saw stronger than the French pattern. In reply, we beg to say that we have, and still make, chain saws of various lengths and substances, and the price is not increased by having them made stronger. Yours obediently,

ARNOLD & SONS.

35 and 36, West Smithfield, *June 1st*, 1877.

THE SUPPRESSION OF IMPOSTORS.—CERTIFICATES OF SOUNDNESS.

To the Editor of the VETERINARY JOURNAL.

SIR,—I wish to make a few remarks on the letter of "Bones," inserted in this month's issue of your *Journal;* also on Mr. R. Poyser's communication relative to certificates of soundness.

For the past two years there has resided in my district one of these impudent impostors, who, in his younger days, used to assist in milking his mother's cows, then carry the opalescent fluid to the houses of the customers night and morning. One day ascertaining that a farrier and cowleech (self-dubbed "veterinary surgeon") residing at Cheam, in this county, required some assistance, he tendered his services; being accepted, he remained there

two years, returned to his native place, declared himself to the public as a veterinary surgeon, opened a forge where horses are shod on improved principles, and in January last increased his notoriety by the addition of the initials M.R.C.V.S. on his labels and after his name in our local directory. I thought it about time to interfere, as reports reached me that he was representing himself to the public, inclusive of several of my employers, as a member of our profession. So I cut the page from the directory, where, under the heading of "Veterinary Surgeons," his name appeared with the aforesaid initials, and forwarded it direct to our President, with a letter asking for assistance to arrest the course adopted by this impostor. In due course I was informed that orders had been given to the secretary to send me the usual form for insertion in the two local newspapers; and on the 29th day of May came the following :—

"10, Red Lion Square, W.C.

"DISCLAIMER.—The Registrar of the Royal College of Veterinary Surgeons has had his attention directed to the 'Kingston Local Directory,' where, under the heading of 'Veterinary Surgeons,' the name of J. C. Aspin, Shrublands and Britannia Road, Surbiton, appears as an M.R.C.V.S. He begs to state that there is no such name on the Register, and therefore he is not a member of the Royal College of Veterinary Surgeons.

"W. H. COATES,
"*Secretary.*

"By order of the President,
"*28th May*, 1877."

To which might be justly added,—He cannot legally call himself a "veterinary surgeon."

In addition to advertising the above in the newspapers, I had five hundred copies of it printed for circulation in the district, trusting that it might deter some persons from entrusting valuable horses and stock in his hands.

I agree with "Bones" that if this matter were properly brought before Parliament next session, an Act would be granted rendering it penal for any unqualified person to style himself "veterinary surgeon." How is this to be done? Not by the assistance of our esteemed President or the Council: they will not stir one inch in the matter,—rely on this fact; but by the united help of the members of the profession. Get up petitions to the House of Commons, subscribe for the expense of drafting the parliamentary bill, and I will undertake to find an M.P. to present the petition and lay the bill on the table of the House: being convinced this is the best course to adopt to realise the wishes of our profession.

A medical friend has just called in, and informs me that the sister profession have now presented a bill to Parliament to amend the Medical Act of 1858, and make the penal conditions more stringent against unqualified persons practising medicine and surgery. Let us follow their example.

Respecting the form of certificate of soundness given by members of our profession, for the past twenty years I have always used the following: "I hereby certify that, at the request of Mr. ———, I have this day examined a bay (brown, or any other colour) gelding or mare, which I am of opinion is (sound, or) unsound from (say) Spavins in both hocks." But I should hesitate to assert that the animal was "absolutely sound," as a recent case will illustrate. Not three months since a member of the profession examined for a client a valuable well-bred animal, six years old, and gave his opinion that it was the best-formed and soundest animal that had been submitted to his inspection for several years. On receipt of this opinion the gentleman parted with his cheque for £250. Apparently all went well until the evening of the 25th of May, on which day the animal had a sharp journey in harness, and did not reach his stable till ten p.m. He then drank his hay-tea, but the

groom states he ate but little of his feed ; he attributed his not eating to the distance he had travelled, and thought it would be all cleared by next morning, so left him for the night. Judge of his consternation, on entering the box about six a.m. of the 26th ult., to find the horse dead. He at once sent a report of the occurrence to his master, and about 9.30 a.m. I was summoned to make a *post-mortem* examination of the animal. I commenced the autopsy, in the presence of the owner, by exposing the abdominal cavity ; the contents were normal, except the kidneys, which were unusually large and flabby, though their internal structure afforded no evidence of active disease existing during life ; there was extravasation of blood into the parenchyma of liver. On exposing the thoracic cavity, I found the lungs increased in size and weight, and engorged with blood ; the heart very large and flabby ; there was effusion of lymph round its base ; the right auricle was twice the size of the left one, with extremely thin walls, and the right ventricle was dilated and full of blood. The opposite auricle and ventricle were but slightly enlarged, though surcharged with blood. On emptying it of its contents and cleansing it, a more minute examination could be made, and disclosed a rupture of the right auriculo-ventricular valve. The brain internally was normal ; externally the vessels were extremely congested. The pericardium was thinner and larger than natural. The heart, with its contents, weighed 14 lbs.

The opinion given was that the animal during its lifetime suffered from dilatation of the heart, that its sharp journey on the previous day induced in a diseased organ the tendency of the valve to rupture at any time, and that my professional *confrère* ought not to be censured for the opinion he had given three months previously.

"I am, Mr. Editor, yours obliged,

"NEMO."

EMPROSTHOTONOS *versus* AZOTUREA.

To the Editor of the VETERINARY JOURNAL.

SIR,—I observe that in your last month's impression a gentleman, who calls himself "Pleximeter," has thought fit to challenge the correctness of my diagnosis in the case which I reported to you as one of Emprosthotonos, in a previous number of your journal. I do not for one moment mean to deny the perfect right which "Pleximeter" has to his own opinion. I do, however, consider that until I know who "Pleximeter" is, I have an equal right to flatter myself with the idea that my diagnosis is quite as likely to be correct as his. Anonymous refutations, such as "Pleximeter's," do not, as a rule, deserve notice ; and I must decline in this instance to enter into a controversy with an unknown adversary. Let "Pleximeter" acknowledge himself, and I will then reply to the subject-matter of his communication.

I am, Sir, yours truly,

W. E. LITT.

Shrewsbury, *June 18th*, 1877.

MENSTRUATION IN THE LOWER ANIMALS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In your issue for May last, I observe an article from Mr. Gerrard, of Market Deeping, relating to the above subject ; and as I am particularly referred to in the same, I must ask your permission to offer a few remarks in

reply. My intention was to have done so last month, but pressure of professional work prevented me.

The whole tenor of Mr. Gerrard's article leads me to think that he is fully impressed with the idea that no one knows anything about the matter but himself. I am distinctly told not to give heed to text-books or the *dicta* of medical authorities, and not even to be too sure of what I see. But on the other hand, I am indirectly advised to place the utmost confidence in himself and *his dicta*—the fruits of his twenty years' study of the book of nature, as these "accord with reason, science, and common-sense!"

Mr. Gerrard must have paid very little attention to what he read in the book of nature, when he asserts that for *one* bovine female showing bloody excreta during œstrum, there are *thousands* which don't! Every practical man must allow that this is either gross misrepresentation, or the most wilful want of observation; I cannot characterise it as anything else.

It is almost needless—and certainly useless as regards Mr. Gerrard—for me again to call attention to the fact, that pelvic abscesses (whether sanious or purely purulent, and the result of injury) have nothing in common with a diseased, isolated, or distended uterus; and that, therefore, the whole of Mr. Gerrard's hypercritical and uncourteously sarcastic remarks are quite beside the point in question. He is arguing about traumatically-diseased parts entirely extra-uterine; while I am drawing quite justifiable conclusions from data relating to a diseased state of the uterus arising from retention of the usual, and more or less sanguinolent, œstral products—which retention was the result of genuine congenital atresia of the vagina.

Laying aside, however, the question of sanguineous excreta during bovine œstration, I may perhaps be allowed to ask what right Mr. Gerrard has to doubt the details of the case of Impervious Vagina given by me as occurring in my practice? Does he mean to allege that I concocted the case, or that I was incapable of judging whether my hand was inside the quey's uterus or in the cavity of a large sanious abscess?

About its having been the uterus, there was not, and is not, the shadow of a doubt; for having seen the butcher who slaughtered the quey, I find that the uterus was cut out and laid aside for my inspection. It was much enlarged, distended, and discoloured; and there was no passage between the vulva and *os uteri* ("outside opening" and "mouth of bed," according to the butcher), except what had been torn open by my hand. Unfortunately, I never saw the parts thus preserved for my examination.

I consider that the captious way in which Mr. Gerrard has handled my communication, is more than enough to retard most hard-working practitioners from putting themselves to the trouble of recording uncommonly interesting cases. As a matter of course, he is quite at liberty to cavil at any theoretical conclusions which may be drawn from the *facts* of the case; but to dispute these facts themselves is coming extremely near actual impertinence.

More than this, however, Mr. Gerrard goes a step farther, and credits me with saying that the sanguinolent œstral discharge in the mare *coagulates* during its retention in the vaginal canal. I most emphatically deny ever having said anything of the kind; so that Mr. Gerrard very likely met with this, as well as other erroneous ideas, during his very extended studies in the book of nature!

With like rashness, and as much truth, Mr. Gerrard, in favouring us with a paragraph relating to two Edinburgh medical gentlemen, tells us a tale about the two fibrous cords, called "retractors of the penis." Now, it so happens that the retractors of the penis in the ox tribe are not "*two fibrous cords*"; and the well-known lecturer on physiology and histology was quite correct

in speaking of what he showed Mr. Gerrard as "receptacles for semen"; for without doubt they must have been the *vesiculæ seminales* and their ejaculatory ducts, which are well developed in bovines.

In conclusion, allow me to ask Mr. Gerrard, What benefit am I to derive from being told that Mr. Andrew Spreull carried a hydrocephalic specimen from the museum to the lecture-room?

Faithfully yours,

Banff, N.B. A. E. MACGILLIVRAY.

CORRIGENDUM.

IN the description of the Chain Saw used by Mr. Hoole in obstetric practice, last month, the size should have been described as nearly *one-sixteenth* of an inch in thickness, and not *one-sixth.*

TO CORRESPONDENTS.

A valued correspondent wishes to arrive at a rough estimate of the number of cases of Pneumonia occurring in the practice of veterinary surgeons, and due to medicines, administered by empirics, passing down the trachea instead of the œsophagus. The statistics for a year would be sufficient, though for a lesser period they would be acceptable.

COMMUNICATIONS from Messrs. Moreton, Smith, Billings, Bates, Wolstenholme, Robinson, Cammack, McEachran, and others, will appear in our next.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from J. B. Martin, Rochester; "Ubique"; J. C. Berne, R.A., Madras; Professor Walley, Edinburgh; J. D. Allman, London; T. Hopkin, Manchester; W. Cumming, Edinburgh; "A Howler;" W. H. Coates, London; T. J. Campsall, Rotherham; Arnold and Sons, London; Professor Law, Cornell University, U.S.A.; F. S. Billings, Berlin; J. Rowe, Jun., London; W. A. Cox, Manchester; J. W. Hill Wolverhampton; Professor MacGillavry, Utrecht; F. Smith, Veterinary Department, Woolwich; J. B. Wolstenholme, Manchester; A. E. MacGillivray, Banff; "Nemo"; R. Reynolds, Liverpool; R. Moreton, Hexham J. Hoole, Sleaford.

BOOKS: *A. Zundel*, Dictionnaire de Médecines, etc., Vétérinaires, vol. iii., part 2; Second Annual Report of the American Veterinary Hospital; "Whose Dog is it?" *A. Bruce*, Infectious and Contagious Diseases of Cattle; Bulletin de la Société Centrale de Médecine Vétérinaire; *G. Fogliata*, Anatomia Fisiologia e Ateleogenia del Cuscinetto Plantare e del Fetone Corneo del Piede del Cavallo.

JOURNALS: *L'Abeille Medicale; Annales de Méd. Vétérinaire; Archives de Méd. Vétérinaire; La Veterinaria Española; Recueil de Méd. Vétérinaire; Wochenschrift für Thierheilkunde, etc.; Der Thierarzt; Journal de Médecine Vétérinaire; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Lancet; British Medical Journal; Edinburgh Medical Journal; Medical Press; Revue Vétérinaire; Journal of the National Agricultural Society of Victoria; American Veterinary Review, No.* 4.

NEWSPAPERS: *North British Agriculturist; Farmer; Mark Lane Express; Agricultural Gazette; Live Stock Journal; Illustrated Australian News; Australasian Sketcher; Australasian; Overland Mail; Albany Argus; The "Field" of Ireland.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

AUGUST, 1877.

VARIOLA EQUINA = HORSE-POX.

(Contributions to Veterinary Medicine and Surgery on Subjects not fully described by authors.)

BY D. MC'EACHRAN, F.R.C.V.S., PRINCIPAL OF THE MONTREAL VETERINARY COLLEGE.

THIS disease having appeared in an enzoötic form in this city during the past winter, enables me to furnish some practical facts with regard to it, which, while they go to corroborate the experiences and observations of Chauveau, Bouley, Reynal, and Röll, and the facts collected and ably written by Mr. Fleming in his "Sanitary Science and Police," will, I hope, be interesting, if not instructive, to some at least of the readers of the *Veterinary Journal.*

In the article under this head by the last-named author, he says: "It has only been perfectly recognised and described in Europe within a recent period—England claiming the distinction of being the first to distinguish it, and to indicate its relation to Cow-pox." Professor Williams, in his standard work on veterinary medicine, says: "It is placed beyond a doubt that the horse is subject to a true equine pox of the same kind as

the Small-pox in man and Cow-pox in the cow. . . . When Small-pox was raging in Edinburgh, in 1872, I saw one case of what I considered genuine Equine-pox." Professor John Gamgee, in referring to this disease in "Domestic Animals," says: "But very little of that disease has been noticed of late years, though I know of several farriers who have been affected from the horse and resisted subsequent variolation or vaccination, and have seen a few who distinguish between the equine vesicle and the 'Grease,' a recurrent disease—*eczema impetiginodes,* as it appears to me."

Professor Law, of Cornell University, says: "This is probably identical with Cow-pox, being indistinguishable when inoculated on men or cattle. It most frequently attacks the limbs, but may affect the face or other parts of the body. There is usually some little fever, which, however, passes unnoticed by the owner. Then swelling, heat, and tenderness supervene, commonly in a heel, and firm nodules form, increasing to one-third or half an inch in diameter; the hair bristles up, and the skin reddens unless previously coloured. On the ninth to the twelfth day, a limpid fluid oozes from the surface, and agglutinates the hairs in yellowish scabs, on the removal of which a red raw depression is seen with the seal fixed in the centre. In three or four days the secretion ceases, the scabs dry up, and the parts heal spontaneously. It is easily transmitted from horse to horse, and to man or the cow. No treatment is required."

It seems very strange that since Dr. Loy called the attention of the medical profession to this subject, early in the present century, it should not have been noticed by any of our English veterinarians; at least, I cannot find any description of it except as quoted above.

On referring to French and German veterinary literature, we find that the disease has not only been recognised, but accurately described. Röll says: "It has been known for a long time that a pustular eruption occurs in the horse, which, being transmitted to cattle, produces Vaccinia. It has been several times observed in France of late years; we have transmitted it both to man and cattle; it is evidently varioloid in its nature.

"The eruption generally breaks out on the posterior part of the pastern; in most cases it is preceded by a febrile reaction more or less intense. It is characterised by swelling and discoloration of the skin, which is very painful, and varies in colour from a rose to a dark-red colour. On the tumefied skin we perceive nodules or pustules in variable number, and from them oozes a yellowish viscid fluid, which, by exposure to the air, rapidly hardens and adheres to the hairs.

"In the hollow of the pastern the infiltration and redness of the skin are considerable, and the epidermis eliminates a viscid, fœtid liquid, which covers it. The fever and the tumefaction of the skin soon diminish, and the secretion from the latter is lessened; it dries up, desquamates, the scabs fall off, and the malady terminates favourably in a fortnight or three weeks."

Bouley saw, co-existing with this exanthema, a vesicular eruption on the buccal mucous membrane, lips, nose, pituitary membrane, and conjunctiva; and by inoculating a cow with the contents of the vesicles he obtained vaccine.

He says: "In 1855 we had several occasions to observe the same exanthema in cavalry horses. The affection is transmitted to other horses by natural infection or inoculation. We failed," he says, "in transmitting it to cattle. We know of no cause for this affection, except its being contagious. The cure requires not the intervention of art; it is sufficient to prevent any action injurious to the diseased parts."

Its origin in Montreal is difficult definitely to account for, unless we attribute it to a varioloid atmospheric contamination (if such an expression is allowable); for it is well known that Small-pox has been and still is alarmingly prevalent in the city, owing to the faulty sanitary condition of certain parts of it, but more especially to an insane prejudice which exists amongst many of the French Canadian population against vaccination.

It first appeared early in February, and for a few weeks spread with considerable rapidity, until at last several hundred horses were affected. In some cases it spread apparently through inoculation, in others it appeared where this was very improbable—often where only one horse was kept, and the

groom had no communication with those affected, not even through curiosity,—fear of contracting the disease himself, or conveying it to his horses, having caused him to keep away from all contact with it. Hence its enzoötic character, and its communicability through atmospheric influences, is established.

That it is contagious there can be no doubt, and I also believe it to be infectious. In most of the stables which it visited, it attacked the majority of the horses; in some instances, while one horse was affected in the heels or legs, the adjoining horses, from their heads coming in contact with the diseased one, have been affected only in the head. Several instances occurred in which grooms became inoculated; in one case the vesicles formed on the face and neck, from the man rubbing a spot or pimple on his face after dressing his horse's legs. He was considerably fevered; complained of pains all over his body, with lassitude and unfitness for work. About the third day the vesicles appeared, several on the face and three or four on the neck. I had him sent to the hospital, where he remained for about a fortnight. The vesicles became pustular, the viscid discharge dried on its surface, and formed a brown scab exactly similar to that of Vaccinia, which it resembled in every particular. In another case, the groom having to dress his Piles, inoculated himself, and gave rise to a very painful attack of Variola Equina in this delicate situation. One of the students of the Veterinary College, having a scratch on his thumb, became inoculated, and not suspecting the nature of the vesicle, on several occasions sucked it after squeezing the lymph out, and produced, to his surprise, a beautiful crop of vaccine-like vesicles on his upper lip. These went through exactly the same course as Vaccinia.

At the Veterinary College, I inoculated a cow in four different parts of the udder. Three of the inoculations produced perfectly developed vaccine vesicles, with the lymph of which I vaccinated another cow in four places, all of which took well and went through the genuine vaccination courses, and furnished me with four perfect crusts. These failed in two instances when used to vaccinate children, as also in that of a dog. This, however, is not surprising, as I have seen the genuine vaccine

lymph from the cow repeatedly fail—both when occurring naturally and when artificially produced—without being able to give any satisfactory explanation why it should do so.

This outbreak of Horse-pox appeared early in the month of February, first in a few scattered cases, and gradually increased till it became epizoötic. Several hundreds of cases must have occurred during that and the two succeeding months. At first it was mistaken by horse owners, and some of the members of the profession, for what is known on this side of the Atlantic as "Scratches," or "Cracked Heels," which is a very common attendant on the long-continued mud and melting snow of our spring and autumn, and consists in irritation of the glandular structures of the dermis in the hollow of the pastern. It readily yields to poultices, followed by astringents, cessation from work, and laxative diet. The consequence was, that under this treatment the disease was aggravated, retarded in its course, and complications resulted, in some cases of a very serious nature.

In several of the early cases which came under my notice, the symptoms were very characteristic—so much so as to make it quite unmistakable. Dr. Larocque, the Medical Health Officer of the city and Superintendent of the Small-pox Hospital, Professor Osler, and others of our leading medical men, visited many of the cases, and unhesitatingly pronounced the malady to be varioloid.

The symptoms varied somewhat in intensity, according to the part on which the eruption occurred; being more severe when in the heel or front of the hind-leg, than on the head or body. In all the animals the earliest indications were fever, lassitude, loss of appetite, slight increase of temperature, pulse from 55 to 70, gradual swelling of the limb—usually a hind one, sometimes a fore one, and in many one hind and one fore, or both hind and both fore limbs simultaneously.

The fever and swelling usually attained their full intensity in about three days, when the skin in the pastern (supposing that to be the seat of the eruption) assumed a pink-red, or bluish-red colour, speedily followed by vesicular eruptions. In some cases these were discrete, and resembled exactly the vesicles of Small-

pox. These pocks, when undisturbed by the attendants or the animal, seldom became confluent, but went through a definite course. First the pock was a vesicle containing and discharging a clear, viscid, lymph-like fluid, possessing a peculiar fœtid odour; this fluid, in drying on the surface, formed a scab which covered the vesicle—now become pustular; and if left alone, in a varying period of from ten to twenty days, this scab was thrown off, leaving a healthy and granulating surface below. On the body and front of the legs, the desiccating process was protracted, owing to the agglutination of the hair by the viscid discharge.

In many cases the swelling was very extensive and painful, extending to the body, and sometimes along the belly; in some it gradually subsided with the progress of the disease; while in others it continued for weeks afterwards. Its absorption was more protracted in the hind than in the fore-legs. A description of a few cases may best illustrate the symptoms in their different forms.

Case I.

On the 24th February, a black horse, seven years old, belonging to a gentleman in the city, and used as a carriage-horse, was admitted to the College hospital, suffering from Variola—and presented the following symptoms: Pulse 56, mouth hot, eyes dull, appetite impaired, thirsty, and disinclined to move; the right fore-leg was swollen to the elbow, and hot and painful; in front of the knee there was a raw surface distinctly nodular; and extending in all directions from the sore, at irregular distances, were numerous vesicles, in some places two or three coalescing, the majority being an inch or two apart, and spread over the swelling. The fluid before mentioned oozed from each, and drying on its surface, formed a yellowish covering for it. The abrasion on the knee was caused by the animal having gnawed it before being admitted. The hollow of the pastern presented the same eruptions, but they were confluent, the discharge forming a large dry cake covering a raw surface. The lips, gums, and nose were studded by pea-shaped vesicles, resembling the others; and the hollow of the pastern of the left hind-leg was also covered by these vesicles, which extended half-way up the

back of the cannon. On this leg, owing to its having been washed with soap and water, poulticed, and otherwise treated as if for "Grease" or "Scratches," the nodules had become confluent, thickened, and attended by more or less induration of the subdermal structures.

This case had been affected for nearly a week before being admitted. A few days afterwards the vesicles became pustular, and by the 10th of March the scabs had mostly dropped off, the swelling and fever had subsided, and the animal was discharged, but was not sent to work for ten days subsequently. The swelling of the hind-leg continued for more than a month.

Case II.

A pair of carriage-horses were affected—one on the left hind-leg, the other on both hind-legs. In the former it was principally confined to the anterior part of the cannon, extending in vesicular eruptions from the fetlock to the hock, and accompanied by considerable fever, swelling, and pain. Owing to the gravitation of the lymph, it assumed the confluent type, forming one adhesive cake or scab, which covered the surface, and having a copious pustular discharge undermining and escaping here and there—the vesicular character being in every stage distinctly visible. This horse's companion was similarly affected, but the eruption was confined more to the heels. This case was apparently inoculated from the other horse, as was also the groom. In both cases the swelling was extensive and persistent. They were discharged on the 5th of March, but the swelling did not completely subside for nearly six weeks.

Case III.

A bay mare, the only animal in the stable, presented the usual febrile symptoms; with tumefaction of the left hind-leg, followed in three or four days by discoloration of the skin in the hollow of the pastern, and the eruption of one or two large vesicles; accompanied by intense pain, and a copious clear albumen-like discharge, adhesive and drying on the skin and hair, as in the other cases, but so copiously effused as to prevent a scab forming. In a few days there appeared three or four similar eruptions on

the leg and thigh, which discharged copiously for some time, then dried up and scabbed over—the swelling rapidly subsiding. In three weeks recovery was complete.

Case IV.

March 16th, a bay gelding, kept in a livery stable containing about thirty horses, four of which only were affected. The febrile symptoms were not severe—in fact, were scarcely observable. The swelling was limited to the neck, the side of the chest, and one quarter. The eruption was well-marked, especially on the quarter—about two dozen pocks covering a space about a foot in diameter. In this case all the stages were well defined, the scabs falling off on the fourteenth day, leaving genuine pock-marks, which only disappeared with the growth of the spring coat.

Case V.

A bay gelding, one of three, all of which were affected. In this horse the vesicles were confined to the lips, gums, Schneiderian membrane, and eyelids. The febrile symptoms were mild; the tumefaction was followed by well-marked vesicles about the size of a pea; the external ones, from being rubbed by the animal on the side of the stall, were raw, depressed in the centre, and discharging a viscid lymph, with the characteristic mouse-like smell. Where the vesicles were not rubbed, they were covered by the yellowish or grey-coloured scab, gradually becoming darker in colour as the pustular and desquamating stage advanced. The mucous membrane of the mouth presented an appearance resembling the Vesicular Epizoöty of cattle in a mild form. The nostrils were surrounded with the viscid glutinous lymph; the pituitary membrane was studded with the vesicles, most of them uncovered—the copious discharge preventing scabs being formed. The submaxillary glands were enlarged, but not indurated. The case altogether resembled Glanders. It ran its course in about fourteen days, when the symptoms gradually disappeared. The other two companion horses were affected—one in the fore-leg severely, and the other in the hind-leg mildly.

The above cases will serve to show the different forms which the disease assumed, but not by any means all the complications which were produced by the injudicious interference of those in attendance, and who, not recognising the variolous nature of the disease, interrupted its natural course, and not only delayed recovery, but in many cases well-nigh caused the death of the animal.

It is a fact worth noting that, as remarked by Professor John Gamgee, "all variolous fevers are characterised by a definite course and duration. They cannot be cut short without endangering the patient's life, and in all there is a period of incubation, eruption, and desiccation."

Treatment.—In all cases in which the disease followed its natural course, no treatment was required, other than attending to the comfort of the animal; although in the majority of the cases either sulphite of soda or bitartrate of potash was freely administered, without producing any perceptible effect on the course or duration of the malady.

Purgatives were also administered, especially where there was much swelling; they were followed by saline diuretics with very good results. In confluent cases, when the crusts became thick and hard, simple dressings with oil and sulphur were used. As above remarked, where the natural course of the disease was disturbed by injudicious interference, the case was protracted and likely to become complicated.

AMAUROSIS.*

BY T. SMITH, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

OF the few diseases of the eye to which the horse is subject, none, I think, has received less attention, or the pathology of which is less understood, than the one under our notice; and yet the detection of this disease, in examining a horse for soundness, is so important as to hardly deserve comment. The reason for this want of knowledge (if I may so call it) of this affection

* Read before the Central Veterinary Medical Society.

is, I believe, attributable to two causes. Firstly, the disease being so insidious in its nature as to render the horse blind before the owner is aware of it, and our utter inability in many cases to account for it, either during life, or even on examination of the organ after death. Secondly, the fruitlessness of treatment in many cases, which has caused it to be looked upon as incurable, and its pathology to be summed up in the few words, "Paralysis of the Optic Nerve." This explanation of the pathology of this affection is generally considered to be the only one, in much the same way as opacity of the lens or its capsule constitutes cataract; but I will endeavour to show that there are many more causes than the one named, all of which are likely to give rise to this disease.

Amaurosis is an imperfect or total loss of vision, through disease of the optic nervous apparatus. The word literally means "to darken." The expression "Gutta Serena" is often used as synonymous with Amaurosis, but it is more properly applied to that full development of the nervous affection in which complete blindness has been produced. The term seems to have arisen from a mistaken idea of its pathology, it being supposed to result from an effusion behind the pupil, and as the latter opening retained its natural colour, the effused drop was said to be clear. In the following passage of his address to light, the poet Milton translates literally this expression of "Gutta Serena:"—

> "But thou
> Revisit'st not these eyes, that roll in vain,
> To feel thy piercing ray, and find no dawn;
> So thick a 'drop serene' had quenched their orbs,
> Or dim suffusion veiled."

Suffusion was also a term employed to denote general imperfection or loss of sight.

Amaurosis may be partial or complete—one eye sound, the other amaurotic, or both amaurotic.

The situation of this disturbance of the ocular nervous apparatus may be in the brain, at or beyond the origin of the optic nerve, in the nerve itself, from its origin in the brain to where it pierces the sclerotic coat of the eye; or, lastly, it may be in

the retina. If the retina be affected, it cannot receive the impression of the rays of light which would ultimately be conveyed by the optic nerve to the brain; if the optic nerve, it cannot convey the visual impressions from the retina; and if the brain, it cannot perceive the visual impression conveyed by the optic nerve: the result is the same whichever part of the optic nervous apparatus is affected. The causes likely to give rise to this affection may be divided into those which operate externally, and those in which a morbid change goes on within the optic nervous apparatus. The extrinsic causes are abscess, tumour, concussion, congestion and laceration of the brain, exostoses of the bones of cranium or orbit, abscess and tumour of the orbit, fracture of cranial bones, with depression, extravasation of blood on the brain, excessive hæmorrhage, and blows on the orbit or head.

The intrinsic causes may be a defective supply of blood to the optic nervous apparatus, or its congestion; direct injury of the nerve, and Retinitis.

Symptoms.—A cursory examination would probably fail to detect anything the matter with the sight, but on looking more critically at the organ, we notice a full prominent condition of the eyeball, of a staring character; the palpebral fissure in many instances is larger than in health; the pupillary opening is in by far the majority of instances more or less dilated, and if not quite immovable, its movements are limited and slow. In cases in which one eye only is affected, the pupil often moves quite naturally, and consentaneously, with that of the other eye; but if you cover the sound eye, the pupil of the amaurotic one remains immovable, or nearly so, being uninfluenced by the degree of light. Sometimes, in complete Amaurosis of both eyes, the pupils are as obedient to change in the degree of light as in health.

I shall attempt to explain these peculiarities in describing the movements of the pupil from Wharton Jones.

The circular fibres of the iris, by which the pupil is contracted, owe their contractile power to the nerve of the third pair, whilst the radiating fibres, by the action of which the pupil is dilated, owe their contractile power to nervous fibres derived from the

sympathetic. When fixed dilatation of the pupil occurs, it may be owing only to that branch of the third pair which goes to the lenticular ganglion, but in many cases of Amaurosis in which the pupil moves in concert with that of the sound eye, there is no reason to suppose the third pair to be affected. The dilatation of the pupil is most probably owing to spasmodic contraction of the radiating fibres of the iris, overpowering the action of the circular ones. If this be so, the contraction of the radiating fibres may be supposed to be owing, in the amaurotic cases, to reflex action of the nerves, on which the contractile power of the radiating fibres depends, called forth by the insensible state of the retina, in a manner analogous to that in which the absence of the stimulation by light of the healthy retina calls forth dilatation of the pupil; whilst, in consequence of the same insensible state of the retina, the reflex action of the nerves on which the contractile power of the circular fibres depends is no longer called forth by the stimulus of light; but in cases of a fixed dilatation of the pupil in which the retina is quite sensible, the mode in which the excitement is communicated to the nerves supplying the radiating fibres of the iris must be different. By cutting the sympathetic and vagus in the neck of dogs, contraction of the pupil takes place in consequence of the radiating fibres of the iris being thereby deprived of their supply of nervous influence, and paralysed, while the circular fibres continue in a state of unrestrained contraction. But as an immediate effect of the section of the sympathetic, dilatation of the pupil may occur, because of the irritation of the nervous fibres, excited at the time by the section. Persistent contraction of the pupil, apparently in consequence of spasmodic action of the circular fibres of the iris, occurs in some cases of Amaurosis: this appears to be caused by an irritable state of the retina exciting reflex action of the nerves of the third pair, in a manner similar, except in degree, to what occurs in ordinary circumstances, by the action of light. Wharton Jones remarks, that in some cases this spasmodic action appears to be occasioned by irritation of the branches of the ophthalmic branch of the fifth nerve exciting reflex action of the *motoris oculi*. In some cases of amaurotic blindness the motions of the pupils under the influnce of light are natural. This is explained by

supposing that the morbid condition on which the blindness depends, involves only that part of the brain which is the seat of visual impressions, and that it is in the front of this part of the brain that the condition of structure through which reflexion takes place from the optic on the oculo-motor nerve exists. The case above-mentioned, in which, as long as the sound eye was uncovered, the pupil of the diseased one moved naturally, but as soon as the sound one was covered the amaurotic one remained fixed, is, I think, explained by the fact that the optic nerves have each a root in both sides of the brain, and may therefore each be connected with both oculo-motor nerves.

Treatment.—We are not often called upon to treat this affection in the chronic state, as in many cases the horse has been blind for some time before it is discovered, or our opinion asked for. If it were possible to determine any cause giving rise to the blindness, the removal of this, if practicable, with the internal administration of calomel and opium, would be the proper course to pursue; but it must be acknowledged that treatment in most of these cases is absolutely useless. But where it arises from a clearly definite cause—as, for instance, a blow over the orbit, with injury to the superior orbital nerve (and this I look upon as the most common of all causes)—the general antiphlogistic plan of treatment suggests itself: bleeding, purging, fomenting, with application of belladonna lotion, and the internal administration of calomel and opium. This latter is a treatment which must be steadily persevered with; ʒi. calomel, combined with ʒss. opium (to prevent the calomel being carried off by the bowels), is to be given morning and evening in a bran mash, until its good effects are noticeable. A lotion, also composed of Ext. Belladonna, grs. xxx., aqua ʒi., should be used, ten minims being dropped into the eye three times a day; this is indispensable where any degree of Iritis exists. In cases where sympathetic Amaurosis is present, as the result of Chronic Inflammation or disorganization of the opposite eye, the calomel and opium treatment should be persevered with; and I should recommend, as worthy of a trial, hypodermic injection of strychnia over the superior orbital nerve or orbital process, commencing with about a grain twice a day, and gradually increasing it; or another way of applying the

same remedy would be to blister the orbital arch, and sprinkle the powdered strychnia on the blistered surface: counter-irritation might also be productive of good effects.

When there is reason for suspecting that the blindness takes its origin from vascular exhaustion or nervous debility, we must have recourse to tonics, preparations of iron, and nourishing diet. But, after all, we shall find many cases which will baffle our best-directed attempts to cure. In speaking of the causes liable to give rise to this affection, I named among them blows over the orbit, and this I stated in my opinion to be the most common. As I have lately had a case under treatment, I should like to give you the outlines of it.

The patient was a bay mare, aged six years, who had received, six weeks before my seeing her, a blow over the left orbit in the hunting-field. There was a partial closure of the palpebral fissure, with opacity of the cornea, contraction of the pupil, and suffusion of tears over the side of the face; the iris (what could be seen of it) was of an orange tinge—in fact, there was every symptom indicative of acute inflammatory action going on in the eye. I had the horse placed upon half-and-half (bran and oats) diet, had a blister of biniodide of mercury applied around the orbit and face, and gave internally powders consisting of calomel ʒi., Pulv. Opii, ʒss.; these were administered night and morning. As Iritis, and probably Retinitis, was present, the belladonna lotion I spoke of before was dropped into the eye three times a day; but as slight adhesions had formed around the iris, there was great difficulty in getting the pupil dilated; this was, however, satisfactorily accomplished by the third day. A cloth was also kept over the eye, saturated with solution of Ext. Belladonna, after the blister had acted. In a week improvement was manifest; the opacity cleared away, and the palpebral fissure began to assume its normal size; but about this time occurred what I had expected,—namely, sympathetic Amaurosis of the other eye; and this is not to be wondered at when we consider the interchange of the fibres of the optic nerves, and that when any morbid action exists in one it extends to the other. This continued for about a fortnight, when symptoms of returning visual power became manifest: during the whole of this time

mercury was exhibited. Nearly the whole of the opacity of the near eye had now disappeared, and I was enabled to examine the interior of it. I found that dislocation of the lens had taken place into the post-chamber as the result of the blow, which renders the horse (unless he could wear an eye-glass) permanently blind, or nearly so, of that eye. A month has now elapsed, and the patient is enabled to see quite well by the right eye. I consider this a good illustrative case; and I have not the slightest doubt in my own mind that, if the unfortunate dislocation of the lens had not occurred in the near eye, the horse would have regained the sight of that also.

PHYSIOLOGICAL AND THERAPEUTICAL NOTES ON NITRITE OF AMYL.

BY JOHN DOWLING ALLMAN, CREECHURCH LANE, LONDON.

IN the *Veterinary Journal* for June, Mr. A. Lawson, M.R.C.V.S., Manchester, gives a case of "Traumatic Tetanus," cured by nitrite of amyl. Mr. Lawson says, "This remedy being new, I hope some members of the veterinary profession will give it a trial." As Mr. Lawson has not said sufficient regarding this powerful drug, perhaps a more detailed account of its physiological and therapeutical action may be of interest to the readers of the *Veterinary Journal*. Nitrite of amyl is not, as Mr. Lawson described it, a "new" remedy, as it has been in use in human practice for many years, and is known to most scientific and therapeutical readers. But it is a drug that has not become of very great repute, nor has it been made officinal; although it has been pushed forward by some eminent and scientific men. It was first discovered by the French chemist, Balard (*Annales de Chimie et de Phys.*, tome xii.), in 1844, and the attention of physiologists was called to it in 1859 by Guthrie. But it was not until 1865 that Dr. Richardson, of London, introduced it to the notice of the medical profession. Since that time it has been a good deal used, and is recorded by some as being satisfactory in its action, though others write of it disparagingly. It is

a yellowish, oily, very volatile liquid, of a very penetrating, persistent, fruity odour. It is prepared by the action of nitric acid on amylic alcohol, or, as it commonly called, fusil oil.

Physiological Action.—Nitrite of amyl can be absorbed by any surface except the skin; but, on account of its volatility, it is seldom if ever used in man, except by inhalation. Owing to the physical property just referred to, its action is marvellously quick and very transient; it being absorbed and eliminated with great rapidity. When inhaled by man in small quantities, the most prominent symptoms are: a sense of great fulness and distension of the head, amounting at last to severe pain, and followed by intense flushing of the face, a deep, laboured respiration, and rapid, violent action of the heart; and it has been noticed by some observers that the cardiac disturbance is sometimes very distinctly manifest before the other symptoms, and in two cases I have known alarming prostration to supervene.

In the lower animals, the first symptoms are just the same as those described in man. After this the breathing becomes violently hurried and panting, progressive muscular weakness and diminution of reflex activity ensue; and, finally, death from failure of respiration,—sensation and consciousness being preserved almost to the last. A most striking symptom is that, a long time before death, the arterial blood becomes of almost the same colour as the venous blood.

Some elaborate experimental studies of the action of nitrite of amyl upon the circulation in animals have been made by Dr. T. Lauder Brunton (*Journal of Anatomy and Physiology*, vol. v.), by Dr. H. C. Wood (*American Journal of the Medical Sciences*, July 1871), and by Dr. Amez Droz (*Archives de Physiologie Normale et Pathologique*, Sept. 1873, p. 467). The results are so uniform, and in such harmony, that they must be accepted as proven facts. It has been noticed by all three observers that, although the pulse is very much increased in frequency, sometimes from the very beginning, the arterial pressure is diminished, and finally is reduced almost to zero, and that the fall of pressure occurs equally after section of the vagi as at other times. As the number of heart-beats in the uninjured

animal is increased rather than diminished, whilst the strength of the individual beat is not perceptibly lessened, it is evident that, at least in the early stages of the poisoning, the diminution of arterial tension is not cardiac in origin, but must be due to dilatation of the capillaries.

A most interesting phenomenon in nitrite of amyl poisoning, discovered by Dr. F. A. Hoffmann, is the appearance of sugar in the urine. He found that in the rabbit a hypodermic injection of 0·111 to 0·113 gramme of the drug is sufficient to cause Diabetes. If twice this amount of amyl salt is used, the sugar becomes very abundant in the urine, and continues to be present for from twelve to thirty hours. Consentaneously with the elimination of sugar, there is a great increase in the amount of urine.

Nitrite of amyl has a most remarkable power in reducing animal temperature, and this may be observed in fever as well as in the normal condition of the animal, and must be attributed to a direct arrest or check of tissue changes or oxidation within or without the blood. Dr. Arthur Gamgee* has made a most masterly examination of the action of the nitrite of amyl on the blood, and has thrown much light upon it. He finds that the spectrum of blood treated with the nitrite of amyl changes simultaneously with the colour. The two sharply-defined absorption bands of the oxyhæmoglobin become fainter and fainter, and entirely disappear, unless the stratum of examined blood be exceedingly thick, when faint indications of them remain apparent. At the same time new bands appear, precisely resembling those of acid hæmatin. If ammonia be added to the chocolate blood, the colour changes back to a blood-red again, and simultaneously the spectrum-lines regain their normal position. If, however, an amount of phosphoric acid precisely equivalent to the amount of ammonia added, and therefore sufficient to neutralize it, be placed in the blood, the chocolate colour re-appears, and with it the changes of the spectrum.

Therapeutics.—In veterinary practice, I am not aware of its ever having been used except in the case described by Mr. Lawson; nor can I recommend it, as it is a drug that cannot

* *Philosophical Transactions*, 1868, p. 589.

with safety be administered by the mouth, and, owing to its very volatile properties, it is not at all suitable for hypodermic injection. In human practice, the only method of administration is by inhalation: from one to three or five drops being placed on a handkerchief and held near the mouth or nose, the handkerchief being removed as soon as a sense of fulness of the head is experienced. Its principal use is for the relief of Angina Pectoris, and it is proved that it will relieve this distressing heart-pang when other remedies have failed; but in no case should it be used if there are any signs of fatty degeneration, or of very great dilatation of the heart, as its employment would be attended with danger, owing to its effect upon the heart's tissue.

Its physiological action would indicate its use in all cases of spasm of the capillaries, of the bronchial tubes, and of the muscular system generally. In Tetanus the remedy would be indicated as a spinal sedative, and as controlling excessive tissue changes, and consequent rise of temperature.

In might be of service as an antidote in strychnia poisoning, as the experiments of Dr. St. Clair Gray* on rabbits yielded very favourable results, although not carried sufficiently far to decide the point. In two rabbits, to each of which ten drops of the nitrite of amyl and half a grain of strychnia were given together subcutaneously, no decided symptoms whatever were induced; whilst one-quarter grain of the alkaloid alone frequently caused death in a single convulsion.

NOTES ON STRANGULATED HERNIA.

BY J. CAMMACK, M.R.C.V.S., BINBROKE, LINCOLNSHIRE.

As a junior practitioner deriving incalculable benefit from the cases recorded from time to time in the periodical literature of the profession, I beg to lay before the readers of the *Veterinary Journal* a brief history of the following case.

The subject was an aged roan cart-stallion, the property of a grocer of Leeds. Some time about the months of July or

* *Glasgow Medical Journal*, 1871, p. 188.

August, 1873, in company with other assistants of an eminent practitioner of that town, we were summoned to this animal, which we were assured was "wrong in his water." A cursory examination suggested Scrotal Hernia, and that strangulated.

On a closer inspection, we noted a rapid wiry pulse of 80 per minute, with the usual symptoms of Acute Enteritis; a marked inclination to lying on his back for some minutes at a time; an enormous pendulous distension of the scrotum, which was hard and tense, though manipulation of it did not appreciably increase the already frightful pain of the sufferer. On inquiry, we learned that he had had some years before one testicle removed, the other not having "come down" at that time; that within the last year or two he had become the sire of more than one foal; that he had been "ruptured" some years; that during the afternoon of that day he had drawn a load of about fifteen hundredweight for some miles; and that he had exhibited violent symptoms of Colic a few hours before our aid was requested, some popular remedies having in the meantime been employed. We were told that the tumour between the legs was of its usual size and appearance. We can compare it to nothing but a bladder or bag distended with fluid or gas, being unable to distinguish the testicle or the presence of other contents.

We attendant veterinary surgeons not having met with such a case before, and our principal being in the North, though agreeing as to its nature and urgency, wasted most valuable time in giving morphia hypodermically, and in removing the patient to the infirmary—a distance of some two miles. However, on his arrival there, we lost no time in casting and securing him on his back, with the intention of operating according to the directions of an Indian practitioner, as described in Professor Williams's "Principles and Practice of Veterinary Surgery." While thus secured, and during the administration of chloroform, he suddenly ceased to breathe. It being now quite dark, we deferred our exploration of the parts till morning, when we found a considerable increase in the size of the tumour. While removing the hind-leg of the affected side, we punctured the scrotum, and this gave rise to the forcible ejection of a blood-stained fluid—serum, doubtless—the quantity of which we could

only guess, estimating it at some quarts. After the removal of an enlarged testicle, from fifteen to twenty inches of highly inflamed and distended bowel were exposed, proving to be part of the small intestine, and containing, as did the bowels generally, much gas and a small quantity of undigested hay. For sanitary reasons, the carcase was hurried from the premises to the knacker's, who reported that, on opening it, it was discovered that the lungs were "gone rotten." This report did not reach our ears for some days, but it explained the unexpected death of our subject, and also reminded us that on one of our number endeavouring to "cough" the horse, while another manipulated the tumour as a diagnostic aid, he could not succeed in compelling it to cough, even when great force was used to compress the trachea.

Now, probably at the risk of being thought dogmatical and presumptuous, I beg to assert, though having seen but one case, and that such a disastrous one, of Strangulated Hernia, that by the early use of the aspirator, which at that time we were daily using, or even by the employment of a minute trocar and cannula, the gaseous or fluid contents of a herniated viscus could be safely and easily evacuated, and that in a very large majority of cases it would itself resume its normal situation. It is evident that in this case the strangulation of the gut did not proceed from engorgement with food, as Percivall states that it always does, but from gaseous distension, which in any Scrotal Hernia, I imagine, may happen during an ordinary Flatulent Colic, in ordinary Enteritis, or from fermentation of the contents of the enterocele, or even from inflammation of its coats, as well as from the above cause.

DISEASES INCIDENT TO WELL-BRED CATTLE: TUBERCULOSIS.*

BY G. W. BATES, V.S., ONTARIO, CANADA.

THIS is a subject which I feel incompetent to treat in an exhaustive manner, as it is worthy of the attention of those most distinguished in the profession. But since it was selected by our worthy Principal and Chairman, with a request that I should write thereon, I could but consent, at the same time knowing that I should meet with a partial if not a complete failure. Hoping, since I have done my utmost, that you will not too rigorously criticise, I will proceed to read this so-called treatise on the Diseases Peculiar to Well-bred Cattle.

In treating this subject I will consider, firstly, the diseases due to ancestral influence or breeding, and secondly, those due to rearing or the manner of feeding, management, etc., of well-bred cattle, especially shorthorns.

By the first division you are aware that if the ancestors have been subject to certain diseases, no matter how brought about, it is probable that the offspring may by inheritance be affected with the same or similar diseases. And should the ancestors have been free from disease, yet there might be generated in the progeny special maladies, due to faulty, injudicious, or even the so-called "fashionable" breeding of the present day.

By the second division of this subject, I wish you to infer that the now adopted manner of rearing well-bred cattle, particularly shorthorns, may propagate diseases which appear to be special; and that both combined—breeding and rearing—surely do generate disorders peculiar to this grand breed of cattle.

The first disease to which I will call your attention is Tuberculosis, or Tubercular Disease.

Tuberculosis may occur in cattle of any kind, and be due to various exciting causes; yet I believe that the majority of cases occurring in well-bred cattle of any breed, can be traced to hereditary tendencies, or such practices as in-and-in breeding.

That in-and-in breeding has a tendency to develop marked

* Read at a meeting of the Ontario Veterinary Medical Society.

characteristics, is a disputed point; yet, to a certainty, it has the tendency to produce weakness of constitution, showing itself by the production of light flesh, contracted chest, etc. What is still more remarkable, is the fact that the progeny of such animals with other stock are likely to be affected in the same manner. Why, then, should we be surprised, when we consider animals so bred, and even unhealthy,—being bred from on account of fancy and value,—that Tuberculosis is fast increasing, and especially among in-and-in bred animals, and the produce of animals so bred? To keep up line-breeding, form, constitution, etc., the essential conditions of a true animal are often sacrificed.

That in-and-in breeding tends to produce the disease is no two-sided question in my mind; though I believe our President stated before the American Shorthorn Breeders' Convention, last December twelve-months, that there might be much said on both sides. He did not say which view he would uphold; but I am inclined to think that he would have been on the side that I venture upon to-night.

The manner of rearing animals bred as above mentioned, has a great deal to do with the development of this disease. I believe that if the more fashionable strains of shorthorns (as I cannot speak experimentally with regard to other breeds) were pampered, as are many of the less fashionable or plainer bred, that the disease would be still more prevalent; since I am of the opinion that either extreme of feeding tends to develop the disease, the germs of which, through ancestral influence, are already, as it were, implanted in the system.

I have noticed, in visiting the herds of fashionable breeders, that the "fancies" were always kept in good breeding condition—neither too fat nor too lean; whilst I have observed, with regard to the less fashionable or plainer-bred animals, that they were either pampered or somewhat neglected, according to the purpose desired.

Tuberculosis is a blood disease, in which deposits of a caseous or calcareous character, or both, occur in different parts of the body, varying in size and structure, most frequently occurring in the organs and structures within the abdominal and thoracic cavities; though not unfrequently found affecting the salivary

glands, and sometimes the joints. When these deposits occur in small masses,—like millet seeds,—they are termed "miliary tubercles" or excrescences, are generally of a grey or yellowish colour, either hard or soft, and are mostly found in connection with the parts within the abdominal cavity. If the deposits be in patches, they are known as "infiltrated tubercles"; whilst "encysted tubercle" is applied when a mass of tubercle is surrounded by a fibrous cyst. This kind is generally found in the mediastinum and mesentery, and consists of either a calcareous or caseous matter—most frequently both. The tumours in connection with the mediastinum may become so large as to interfere more or less with respiration. When tubercular deposits of any kind occur to any extent in connection with the digestive organs or mesentery, they interfere with the assimilation of food; consequently derangement of the digestive organs takes place, and the general health of the animal begins to fail.

Tuberculosis may follow an attack of Pleuro-pneumonia.* It may be caused by the injudicious use of artificial foods, impure water, vitiated air, when animals are crowded together in imperfectly ventilated stables, etc. Climatic influences and sudden changes of temperature tend to develop the disease, as over or under feeding does, when there is a predisposing cause; yet I think it seldom happens that they prove a direct cause.

The symptoms are generally as follows: The animal becomes unthrifty, the appetite capricious, coat staring, mucous membranes paler than natural, and the circulation weakened. The beast loses condition, the skin becomes somewhat yellow and adherent to the subcutaneous tissues. A dry cough exists, which becomes more troublesome as the disease advances; though it may be present, perhaps, without any discharge from the nose. The rumen is prone to be tympanitic. There is difficulty in walking, the back is more or less arched, and a short grunt accompanies each expiration. The animal generally

* Tuberculosis succeeding Pleuro-pneumonia must be looked upon as a purely accidental circumstance, as there is no relationship or affinity between the two maladies: they are perfectly separate and distinct, and can, and do, exist entirely independent of each other.—Ed. *V. J.*

evinces pain when pressed upon the back or sides, and if a cow and in calf, she is very likely to abort. Diarrhœa soon sets in, which carries off the sufferer from within a few days to perhaps a week or two ; by which time it has become a mere skeleton. The lungs are sometimes inflamed, and even Hydrothorax and Ascites may be present. Not unfrequently the salivary glands are enlarged—sometimes so much so as to interfere greatly with respiration. Lameness may also be present, due to tubercular deposits in the joints.

Professor Williams says that Tuberculosis is very often hereditary, and that he has frequently seen it commit havoc amongst many herds, in the breeding of which no attention had been paid to stoutness as well as beauty of conformation. This goes to prove the peculiarity of the disease in well-bred cattle ; since lineage is looked to as much, or even more, than stoutness, beauty of conformation, etc., in the breeding of fashionable cattle.

The following are some cases that I have had the opportunity of seeing ; and without exception they were in-and-in bred animals, or the offspring of animals or an animal so bred.

You, or at least many of you, had the opportunity last session of seeing the respiratory and digestive organs of a shorthorn bull which died in Illinois ; and it is needless to repeat what has often been said : "Tuberculosis, and not tartar emetic, was the cause of his death." Let it suffice to say that the animal was an in-and-in bred bull—an in-and-in bred "Duke."

On the 22nd of July, 1874, a person in Missouri purchased, in Kentucky, a red shorthorn heifer, then two years old, got by an in-and-in bred "Duke" bull—first dam by an in-bred bull, second dam an in-and-in bred cow. So that if this heifer was not an in-and-in bred animal, she was equivalent to the same ; being a daughter of an in-and-in bred bull, the granddaughter of an in-bred bull and also of an in-and-in bred cow. The heifer was removed to Missouri in the first week of August, and she was bred to an in-and-in bred "Rose of Sharon" bull, on the 10th day of September.

In the latter part of November, or early in December, the heifer began to show signs of dejection, yet not sufficient to

make one apprehend any serious results. Day by day she became worse and worse. She had been liberally fed; but her appetite had been somewhat capricious, and now became more so. Her coat was staring, and her hide adherent to the subcutaneous tissues. The mucous membranes became paler than natural, and the animal seemed to move with much difficulty. Her back was arched, and she sought solitude, keeping away from the rest of the herd. So she continued from bad to worse, until the 7th day of May, 1875, when she aborted, producing a red heifer calf, having been seven months and twenty-seven days pregnant. This fœtus was perfectly developed, and weighed twenty-one pounds; yet it was not as heavily coated as a fœtus should be at the proper time of parturition. The calf, though very weak and small, began to walk when about a month old.

The cow went on from bad to worse, becoming very constipated, and showing signs of tympanitis now and then. The breathing was accelerated, and a short grunt accompanied each expiration. Pressure upon the sides and spine caused her to evince pain. She soon refused her food, yet she had great thirst. Diarrhœa setting in, the animal died a lingering death on the evening of May 29th. The attack of Diarrhœa commenced about two weeks before the fatal issue, and continued until the animal succumbed. There were no external enlargements, such as of the parotid glands and the like.

Having died in the evening, the carcase was not examined until next morning, when a *post-mortem* examination showed that, to use a common phrase, the hide was grown to the body. The rumen, intestines, and peritoneum, were covered with yellow tubercles of a cheesy consistency, varying in size from a millet seed to that of a filbert; being largest on the rumen, and smallest on the peritoneum. The contents of the thoracic cavity were not so badly affected with tubercular deposits as were those of the abdominal; though I found in the mediastinum two deposits about the size of one's fist, of a calcareous nature. The lungs were somewhat hepatized and, when cut into, revealed deposits of a half-calcareous and half-caseous matter. Not being partial to *post-mortem* examinations, I made no further investigation, being satisfied that she could not have lived.

The next case that I saw, and had the opportunity of making a *post-mortem* examination of, was the calf alluded to above.

This calf did well after she was about a month old; and being a pet, scarcely, if ever, knew what it was to be hungry.

Last March, whilst at College, I received a letter stating that her parotid glands were enlarged, that they had been opened, and that pus had discharged; also mentioning that, before the glands were opened, the swelling had interfered with respiration.

When I returned to Missouri, in April last, I found her as above described—still very fat, and the respiration easy. There was no pus discharged from the parotid glands at this time, though the openings into them were "free." On manipulation, I found the glands hard; and knowing the history of the case, I had no difficulty in diagnosing it as one of Tuberculosis. I advised the owner to send the animal to the butcher; but the reply was, "If I lose any I will lose all." I then recommended the use of potassium iodide, in drachm doses, to be given internally thrice daily, and the application of poultices to the glands; also that the heifer should be turned out on pasture.

I did not trouble myself much about the case, for since I first heard of Tuberculosis I had always expected her to die from the affection.

The animal remained in this state until about the 5th of May. Having left for Illinois on the 1st, returning on the 11th I was much surprised to find her greatly emaciated, coat staring, hide-bound, back somewhat arched, breathing laboured, a short grunt accompanying each respiration, and when made to move doing so with great difficulty. The parotid glands were hard and much enlarged; the mucous membranes pale.

I now ordered the destruction of the heifer. My request not being complied with, I re-opened the parotid glands and applied poultices, and so succeeded in somewhat relieving the poor beast. She continued from bad to worse until the 25th, when she breathed her last. The appetite, tympanitic attacks, and diarrhœa, were as in the former case.

The *post-mortem* examination revealed miliary tubercular deposits throughout the course of the alimentary canal, reaching

from the mouth to the anus. They were of a cheesy consistency, and greyish colour. The rumen was covered, as also were the liver and spleen, with deposits of a semi-calcareous nature. There were no deposits on the peritoneum, though the mediastinum and mesentery contained many encysted tubercles of a semi-calcareous and semi-caseous character, varying in size from that of a hazel-nut to a goose-egg. The parotid glands presented a calcareo-caseous mass, containing a little pus. The contents of the digestive organs were whitish, with a very fœtid acid smell. The mucous membrane of the stomachs was dark, and could be easily removed from the submucous tissue.

The next case (or rather it occurred before the last) was a red bull, calved August 1st, 1873. He did very well until eleven months old, when he began to fail. Finding that he would never make an animal fit to use as a breeder, he was castrated when twenty months old, and turned on the fresh spring pasture. He did not gain much, if any, during the summer; yet he was sold in the autumn of 1875. Some time before he was disposed of he became slightly lame in his hind-limbs, and this lameness continued to increase. Some people thought it was due to Rheumatism. I did not know what it was, but am now of opinion that the lameness might have been due to tubercular deposits in the joints of the hind-legs, as I am convinced that the case was one of Tuberculosis, though not in so violent a form as the two former cases. Suffice it to say that he was an in-bred animal, and by an in-and-in bred bull.

As regards the treatment of Tuberculosis, all seem to agree that it is unsatisfactory, and generally useless. The best thing to do is to fatten as best you can, and sell to the butcher. If emaciation has begun, and the animal is then not fat enough for the butcher, it is very likely that she never will be, so the most profitable treatment is the shortest. In case of a valuable animal (if I may so term one affected with this disease), you may have to endeavour to treat; since if it be a cow, and in calf, a breeder will say "that he would be satisfied should she only live to drop the calf." I believe that, on the whole, it would prove more profitable, if not more satisfactory, if all animals affected with Tuberculosis to any extent were to die before parturition. If

one endeavours to treat, he may try the use of tonics, both vegetable and mineral; also antiseptics, stomachics, antacids, and (when there is glandular enlargement) iodide of potassium. Feed on the best of food, and attend to the general comfort of the animal. The natural food is the best; therefore, where there is protection from the scorching sun and cold rains, the animal may be turned on good grass. Should one desire to fatten the animal, he may use linseed meal, cod liver oil, etc., combined with the best of grains and grasses.

I might express an opinion with regard to the nature of this ailment—which, I feel confident, has carried off many of the highest-priced cattle of the past few years; yet I will reserve it, and merely say that I believe in-and-in breeding tends to produce Tuberculosis.

There are some other diseases to which I think shorthorns are especially very susceptible, since they are mostly due to the characteristic properties of laying on flesh, which properties shorthorns possess to a greater extent than any other breed of cattle that it has ever been my pleasure to see.

Among these diseases, I may mention lameness as one of the most common, such as sprains and the like whilst at pasture, due to the very heavy weight imposed on small bones; since it seems to be a rule, in the breeding of any strain of shorthorns, to have the greatest amount of flesh on the smallest amount of well-developed bone, thereby producing the least possible amount of offal. We also have Capped Knee (distension of the bursa of the *extensor metacarpi magnus*), caused most frequently by the animal having to lie on hard floors. I have seen Capped Knee occur more frequently in bulls than in cows; and the reasons are that the floor of a bull's stall is generally more sloping than that of a cow, which tends to make the bedding slip backwards; that at times the bull is very restless, consequently rises and lies down frequently, which tends to bruise the knees, as well as move the bedding from under him; and lastly, that bulls are kept in the stable more than are cows.

There may also be other diseases, such as those of the female, due to a too plethoric condition of the system, or to the mechanical interference of fat—among which I will mention sterility.

Lastly, though not least, we frequently meet with the loss of power of coition in the male, due to too high a condition of the body.

The proper treatment in the two latter cases—barrenness in the female, and loss of coitive power in the male—would consist in reducing the animal by exercise, and only allowing enough food to keep the body in proper condition. Afterwards the use of nerve stimulants, and even, if necessary, tonics, might be tried. Never fail, in sterility of the female, to make an examination *per vaginam,* so as to ascertain the condition of the *os uteri ;* and it should ever be our aim to keep breeding animals in their most healthy and vigorous condition, since the most profitable and satisfactory returns will be thereby obtained.

TRANSVERSE PRESENTATIONS IN PARTURITION.

BY J. CAMERON, M.R.C.V.S., BERWICK-ON-TWEED.

It was only on reading this month's (June) *Veterinary Journal,* that I became aware of there being any dispute regarding transverse presentations ; and this season having had the misfortune to have a case of that sort, I thought that perhaps a short account of it might not be without interest to some members of the profession. On the 10th of April I was requested by R. Elliot, Esq., Grieve Stead, Norham-on-Tweed, to attend a mare, said to have "picked twin foals." At the same time I was asked to look at another mare, aged, and in foal, which the owner was afraid was also about to have twins, as she was such a size, and the same on both sides. However, all went well until May 13th, when she showed signs of foaling ; but after a short time she became easy, and continued so until the next afternoon, when real labour pains began, and continued for some hours, the fœtal membranes being ruptured, and the fluids expelled. After waiting some time, and nothing appearing externally, nor yet being felt on examination internally, I was requested to attend as soon as possible. On my arrival, I found the mare standing quite at ease. I watched her a short time to

see how she would conduct herself; but she made no effort at foaling whatever. I then introduced my hand, and found all the parts fully dilated; and, at the whole length of my arm, felt the fœtus. I thought this would excite the labour pains, and bring the fœtus more within reach; so I waited some time, but she made little or no effort. I then examined her more carefully, and found that the fœtus was dead. The first parts of it within reach were the ribs; and at the full stretch of my arm, on the right side, I felt one stifle; and at the same distance, on the left, I discovered the point of the sternum and both elbows. I could, with great exertion, work my fingers along the inferior surface of the neck for a short distance, and along one fore-arm to very near the knee.

I had no difficulty in deciding that I had to do with a Transverse Presentation; and the fœtus was evidently on its back. I tried hard to get hold of the fore-leg below the knee, and thus be able to flex it, and perhaps do some good thereby; also, to push it round more into the right side; but all my efforts were unavailing.

The shepherd, a tall, powerful man, and the owner, also tried their utmost to alter its position; but with no success. We then walked the mare into the stackyard, killed her instantaneously, turned her on her back, and made a complete longitudinal and transverse section of the abdominal walls, completely exposing the whole of the viscera. I was very careful not to disturb the relation of parts; and now any person could see at a glance that the fœtus was lying transversely to the body of the mare, and as large at one side as the other, a little curved foreward at each side, and quite horizontal in the floor of the abdomen. I then made a long crescentic opening in the uterus from side to side, exposing the entire length of the fœtus; and as it then lay, the parts first exposed to view were the face, mane, shoulder, back, part of side, and one haunch. Neither the head nor fore-legs, nor yet the hind-legs, were bent on the body. The fœtus was as exactly transverse as it could be placed, with the back slightly arched, the hind-legs directed foreward on the right side, and the head and fore-legs also foreward, but on the left side the body being two-thirds on its back. It was a colt, very large and in

good condition; and there was every sign a day or two previously of its being alive. The mare had not performed any labour since turnip-time last year, and was sixteen days beyond her time. I think, from the abdominal proportions of the mare for such a long time previous to foaling, that it is very probable the fœtus had been in the transverse position all the time, the turning on its back taking place at or shortly prior to its death.

SUCCESSFUL TREATMENT OF UMBILICAL HERNIA IN A DOG BY LIGATURE.

BY JOHN W. HILL, M.R.C.V.S., WOLVERHAMPTON.

ON the 25th of last month, a young pug dog, fourteen weeks old, belonging to Mr. Mayou of this town, was brought for my advice regarding a navel enlargement, which I pronounced to be Hernia and most probably *intestinal;* but I could detect no communication between the protruded portion, whatever it was, and the intestine within the abdomen, nor could any manipulation reduce it. Fasting made no difference in its appearance or feel, nor yet did a full meal.

The enlargement was very much constricted at its base, and gave one the idea of an empty portion of intestine or bladder, blown and tied firmly round.

To ascertain its exact nature before resorting to any operation for its removal (after fasting the animal), I explored it with a suture needle; but neither blood, serum, or any other kind of fluid, nor yet did collapse, follow the puncture.

The owner then acting on my advice, chloroform was administered to the patient, and an incision made through the skin over the part with a lancet, for the purpose of removing the protrusion by ligature, should it prove to be omentum or obliterated intestine,—or if both, and the latter was not obliterated, to return it and close the aperture with suture.

It was found to be the former, and removed accordingly; a couple of stitches being inserted through the lips of the divided

integument, and the ends of the ligature left out. Orders were given for the patient to be watched, so that he might not interfere with the part, and to be kept quiet. On the fifth day the ligature sloughed off, and at the end of another similar period the wound was whole.

I was to-day (the 16th of July) informed by the owner that the dog was perfectly well, and that there was no mark or enlargement of any kind to be detected.

PERFORMANCE OF THE CÆSARIAN OPERATION ON A BITCH.

BY THE SAME.

THIS morning (the 15th July) between 10 and 11 o'clock, I was requested to attend an Irish setter bitch, which I was informed had yesterday afternoon given birth to one dead and three live puppies, and since 11 o'clock last night had been in severe labour with what the owner believed to be a "cross-birth."

When I arrived the bitch was lying prostrate, with hurried respiration, rapid small pulse, eyes sunk, and extremities cold. On examination *per vaginam,* I found one fore-leg of a whelp presented, and the head doubled back within the womb. The leg in question had been so tugged at that it was dislocated, and almost severed from the shoulder; the vaginal parts were extremely inflamed, being of a deep purple tint and very swollen. After first administering a little brandy and milk to my patient, I placed a noose round the presented limb and returned it within the womb, and then endeavoured to bring the head into position, but without success. As the poor creature was now so extremely exhausted—in fact, too weak to stand, and the pains were very feeble and at long intervals, I suggested —as the only chance for the mother, and also because the offspring were valuable and several yet unborn—the *Cæsarian operation,* which the owner consented to. Placing her under chloroform, on a table, I made a section in the left iliac region,

through the abdominal muscles and peritoneum, and then exposing the uterus I incised it between four and five inches, and removed eight whelps—six alive and two dead.* I closed the uterine opening with continuous silk suture, the peritoneum and abdominal muscles with continuous gut suture, and the skin with interrupted linen-thread suture.

The parts were then sponged with warm water, a little brandy and milk, with ten drops of laudanum, administered, and the patient placed on a rug over a thick bed of straw; strict quietude was ordered, and a little brandy and milk only to be given in two hours.

At six o'clock on the same evening I visited my patient, and with much regret learned she had just expired. I was informed she had not shown any symptoms of pain or uneasiness since the operation, that she had risen to her feet a few moments before she died, walked to her master, and wagged her tail.

In this case death resulted from sheer exhaustion. No support of any description had been given to the poor creature but what she chose herself to take, until I first arrived; she had been in severe labour for many hours, and only the following morning was any assistance rendered, and that, until my services were requested, had been rough, unpractical, and injurious.

I feel convinced that had the operation been performed seven or eight hours earlier, the mother's life would have been saved; or that, in the first instance, proper assistance would have procured a natural birth of the abnormally presented one. The whelps that were alive are being reared by hand, and, so far, are doing well.

* The *uterus*, internally, was intensely inflamed—the *os* being perfectly black, and the whole membrane more or less livid. One portion of intestine, just observable, was also much inflamed. My prognosis, from these appearances and the other conditions of the bitch, was unfavourable.

A CONTRIBUTION TO THE ANATOMY AND PHYSIOLOGY OF THE KERATOGENOUS MEMBRANE OF THE HORSE'S FOOT.

BY DR. MOELLER,

*Lecturer on Surgery, and Demonstrator of Operative Surgery at the Royal Veterinary Institute, Berlin, Germany.**

THE following contribution does not lay claim to be an exhaustive or scientific treatise on the histological anatomy and the physiological processes which take place in the keratogenous membrane (*Huflederhaut*) of the horse's foot; but it will be my endeavour to discuss those subjects in such manner as shall make them of practical value in the diagnosis and treatment of morbid processes in the parts in question, as well as in surgical operations. If this end is not attained in all those points which it is desirable to overcome, and the practical estimation of the conditions about to be discussed are in certain respects only cursorily touched upon, this has been owing to a desire not to disturb the connection of things in certain other relations. This incomplete part of the work the author hopes soon to find an opportunity for publishing.

ANATOMY.

The keratogenous membrane of the horse's foot forms a part of the cutis, especially that portion which is enclosed in the hoof capsule or "horny box." The hoof constitutes the epidermis of the same. The keratogenous membrane is, therefore, subdivided into parts corresponding to the different divisions of this horny capsule in the now well-known manner—viz., Podophyllous tissue (*Fleischwand, Fleischsohle, Fleischstrahl*)—which are included in the so-called "velvety tissue" of the English, etc.

Although the keratogenous membrane corresponds in its general composition to the cutis of other portions of the organism, still it presents a number of special peculiarities, which are intimately related to its particular physiological functions.

* Translated from the *Archiv für Thierheilkunde*, Band. iii., Heft 2, 3, with the kind permission of the author, for the *Veterinary Journal*. By F. S. Billings, of Boston, U.S.A., and student at Berlin.

One of the functions attributed to it is the formation of the hoof capsule. Besides this, it also serves to provide a firm, and relatively inelastic, mode of union between the *os pedis* and the hoof. When we take both of these points into consideration, it appears self-evident that this portion of the cutis must possess a peculiar arrangement.

The simple surface of the cutis is not sufficient to meet the requirements necessary to the production of that mass of epidermis which we name hoof; we are therefore justified in assuming that an enormous multiplication of this material must take place upon the keratogenous membrane (*Huflederhaut*, literally, "Dermis of the hoof"). It is further absolutely necessary that a loose and movable subcutis should not be present, especially at those points where the keratogenous membrane serves as a firm and unyielding bond between the *os pedis* and hoof.

In regard to this last point, I will at once mention that a subcutis is entirely absent at all those parts where the keratogenous membrane immediately covers the *os pedis*, except a portion of the coronary cushion (*bourrelet*, Fr., *Kronenwulst*, Ger.) and the superior part of the podophyllous tissue (*Fleischwand*—"fleshy wall," "laminal tissue"). Upon the remaining portion of the keratogenous membrane is to be found, in part, a very thick subcutis—the "frog-cushion" (*Strahlpolster*)—including the "pyramidal body" and "plantar cushion";* which, however, offers many variations in its anatomical construction from the subcutis in general.

Upon a level with the articulation of the first with the second phalanx, the cutis passes without any marked limits into the perioplic ring (*Fleischsaum*). The corium is thereby gradually increased in thickness, and upon its surface are observed large papillæ. These form at first only small projections upon the corium, but they gradually increase in length; so that those papillæ situated upon the inferior (lower) limits of the perioplic ring present a length of two millimetres or more.

The greater part of the perioplic ring—that is, that portion of

* In a strictly scientific sense, the term "plantar cushion" is only applicable to the hind-feet, and we should speak of *volar cushion* for the anterior extremities.

the corium which forms the *Saumband* (the superior part of the perioplic ring),—is still between the long hairs which cover the coronet of the hoof; only the inferior part of the perioplic ring—that towards the hoof—is to an extent of perhaps five millimetres hairless, and possesses the most completely developed papillæ. The inferior limits of the perioplic ring is distinguished from the coronary cushion by the so-called *Kronenfalz* (coronary groove).

The coronary cushion (*Kronenwulst*) forms a very marked thickening of the corium, which lies upon the second phalanx in the form of a half-round cushion (*Wulst*), and turns inward and downward upon the infero-lateral portions of the same, in order to form the crown of the bars (*Eckstrehentheile*).

This portion of the keratogenous membrane, the matrix for the horny capsule, and the bars, are also provided with papillæ, which offer some variations in their form, direction, and colour. Those who would study this subject further, the author refers to an article by him entitled "Entwickelungsgeschichte des Hufes," which is to be found in Gurl and Hertwig's *Magazine für Thierheilkunde*, vol. xxxviii.

With regard to the arrangement of the papillæ upon the coronary cushion, Fleming * has long since noticed that those laminæ (*Fleischblättchen*) situated next to the wall are arranged in very regularly disposed rows, which exactly correspond to the direction of the laminæ of the wall. These rows lie also in the length-direction of the fleshy laminæ. The interpapillary spaces form furrows exactly corresponding to the projections lying between the fleshy laminæ. According to Fleming, this arrangement is to be found on that part of the coronary cushion which is directed toward the podophyllous tissue (*Fleischwand*)—viz., the white zone.

This description holds good for the entire portion of the coronet which corresponds to the toe. Variations are, however, to be observed upon those portions corresponding to the sides and quarters (*Seiten und Trachtentheile*). The rows of papillæ upon these portions of the coronet are no more in direct lines, but are to be seen forming a curve towards the quarters of the

* *The Veterinarian*, 1870.

hoof. The arch formed by them corresponds to a section of a circle, which gradually becomes smaller as it approaches the quarters (and heels).

It is well to notice this circumstance, because the arrangement is not without influence in the extension of inflammatory processes, and it is of value in diagnosing these, as will be demonstrated hereafter.

The perioplic ring, as well as the coronary cushion, possess a strongly developed subcutis, which is composed of loose connective tissue, in addition to great quantities of elastic tissue, which is a direct continuation of the subcutis of the adjoining cutis. The same extends under the podophyllous tissue upon the toe, or anterior portions of the hoof, to the same distance as the insertional tendon of the *extensor digitorum communis;* upon the sides of the hoof it accompanies the podophyllous tissue for perhaps five to ten millimetres. Upon all those portions where the cartilages form the foundation for the podophyllous tissue, a modified subcutis is to be found. But of this hereafter.

I. Cutis.

A. We will now turn our attention to the arrangement of the podophyllous tissue.

Microscopically considered, this, the wall portion of the keratogenous membrane, as well as the remaining portions of the same, is distinguished from the corium of the cutis by its intensely red colour. This attains such a high degree, as to bear a striking resemblance to the colour of the muscles or flesh; therefore the names *Fleischwand, Sohle, and Strahl*—flesh-wall, sole, and frog. This colour is owing to the rich vascularization of the parts. The thickness of the podophyllous tissue decreases gradually from the coronary cushion to the inferior edges of the *os pedis.* So far as the podophyllous tissue is related to the *os pedis,* the subcutis fails; we can microscopically discover in it the following more or less distinct portions:*—

* Bracy Clark noticed several portions in this tissue in his "Hippodonomia," published in 1832. The laminal-portion podophylla (*Blattschicht*) consisted, according to him, of cartilaginous tissue, under that a layer which he called the *Reticulum processi gerum,* because from this the laminæ appeared to proceed, and were also supported by it. Bouley (*Traité du Pied du Cheval,* 1851) divides this tissue into

1. The *os pedis* is provided with many elevations and depressions, and immediately joining and combining with these, we find a stratum of fibres of elastic and connective tissue, which are very compactly interlaced one with the other. These fibres take a direction perpendicular to the surface of the *os pedis*, and extend from this towards the surface of the wall. The cellular elements of the connective tissue assume a very subordinate position in the construction of this stratum. The spindle-shaped cells are very seldom met with; so that the stratum bears a striking resemblance to the tissues of ligaments and tendons. In that portion of the stratum in immediate relation with the *os pedis*, are to be found in many places, and especially in the inferior portion of the podophyllous tissue, round or oval-shaped cells, which are generally lying in rows, and as a rule running parallel with the fibres of connective tissue. The apparently double contour which these cells offer, as well as the large nucleus, their finely granulated nature, their ends flattened when they come in contact one with the other, and their arrangement in rows, all gives to them the character of chondroblasts, and the tissue as a whole that of fibro-cartilage—connective-tissue cartilage. In general, the parallel fibres of this stratum lie closely pressed one upon another; only here and there are to be found between them cleft-like openings, which take a course perpendicular to the surface of the *os pedis* and corresponding to the course of the fibres. In a transverse section of this portion of the stratum will be seen in these cleft-like cavities several bloodvessels—which take a course from above downwards, and the contrary—corresponding to the surface of the *os pedis*. This stratum evidently represents the periosteum of the *os pedis*; therefore I would suggest for it as appropriate the name of *Stratum periostale*. (*See* Fig. 7, *b*.)

2. Above or external to this stratum, we meet another, also composed of fibrous connective tissue and elastic fibres, but which, however, presents marked variations in its arrangement from the above. The fibres of this stratum are bound together

three layers or membranes. He distinguishes between an inner—"fibrous membrane," a middle—"vascular," and the "*membrane podophylleuse.*" This description of Bouley's is appropriate, except in the histological arrangement.

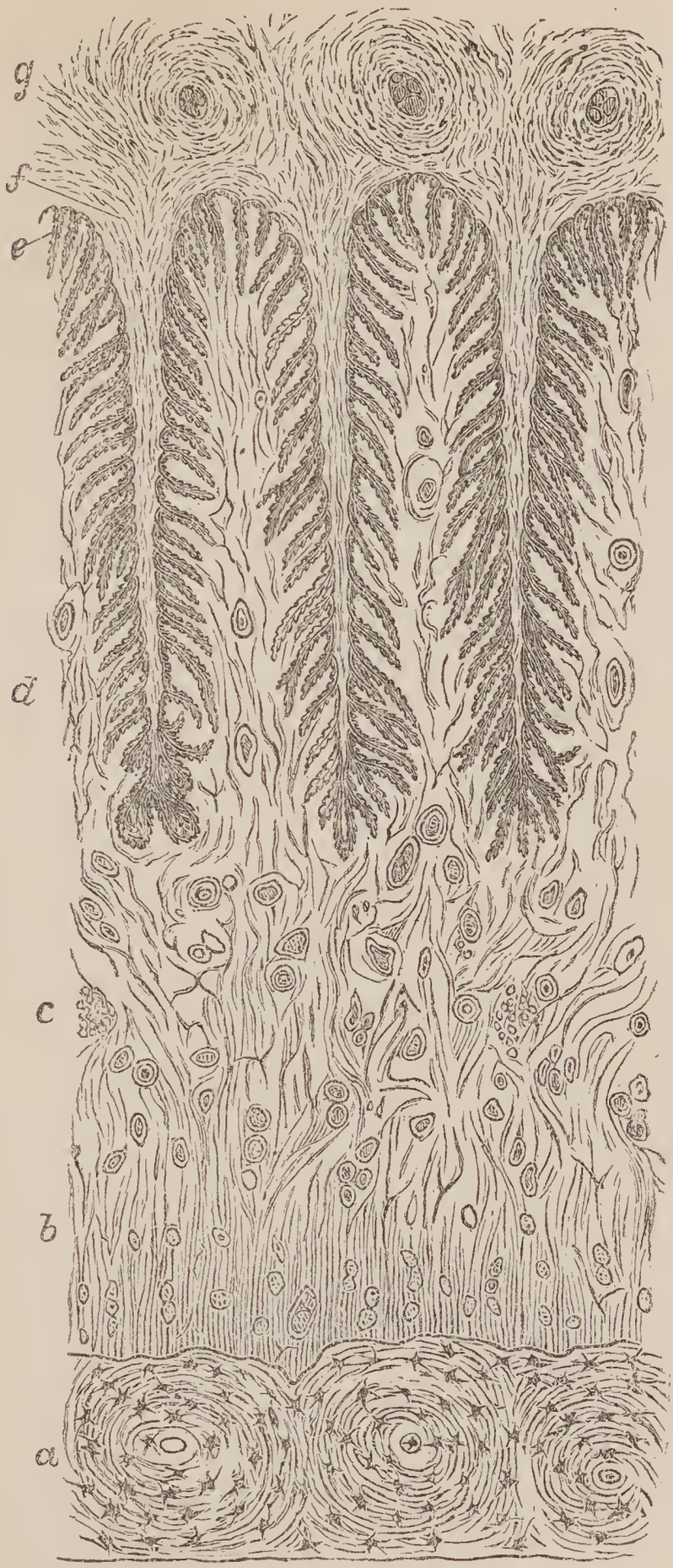

FIG 7.

Tranverse section of the hoof and vascula tissues at the anterior part of the Horse's Foot.

a. Bony tissue of the *os pedis.* *b. Stratum periostale.* *c. Stratum vasculosum.* *d. Stratum phyllodes.* *e.* Secondary horny laminæ, or *laminellæ.* *f.* Primary laminæ. *g.* Wall of the hoof with its horn-fibres.

in coarse bundles and *striæ*, which cross each other in various directions, and form a coarse network. In the meshes of this network are to be found numerous bloodvessels, which are generally of considerable size, and usually pass from the superior to the inferior portion of the foot. These vessels are generally to be seen microscopically. On account of the greatly varying course of the bundles of connective tissue, one often meets with a transverse section of the same in the microscopical preparation. The cellular elements also occupy a subordinate position in this stratum, but they are, nevertheless, much more abundantly represented than in the stratum previously described. In the loose connective tissue which forms the perivascular tissue, and unites the vessels one with another, as well as connecting them with the meshes of the network, are to be found a greater number of cellular elements. This stratum is exceedingly rich in vessels of considerable size; therefore I think it justifiable to name it the *stratum vasculosum*. (Fig. 7, *c*.)

3. Following this stratum, and external to it, we find the terminal stratum of the podophyllous tissue, or the laminæ. Upon the outer limits of the above stratum the coarse bundles of connective tissue begin to lose their continuity, and the single fibres are noticed to assume more definite directions. And as these fibres cross and re-cross each other in every direction, the above-mentioned coarse network becomes transformed into a finer tissue. In the meshes of this tissue are to be observed vessels and nerves; and here and there are noticed cellular elements —viz., round cells (*Wanderzellen*); and, finally, delicate elastic fibres in great numbers. Outside of this the connective tissue again unites and forms processes,—projections in the form of thin leaves, laminæ (*Fleischblättchen*—literally, diminutive flesh-like leaves). These laminæ are made up of the same fibrous connective tissue, elastic fibres, and a few round cells. The course of the fibres is from the base to the free border of the laminæ. The bloodvessels—at least the larger ones—are to be seen exclusively in the middle of each lamina, and ascend and descend in the direction of the same from the superior to the inferior portion of the *os pedis*.

(*To be continued.*)

Editorial.

THE ARMY VETERINARY DEPARTMENT.

Our pages have frequently testified to the great and well-founded discontent which has now for a long time prevailed among the army veterinary surgeons, and to the urgent need that exists for improving their pay, position, and prospects. No department of Her Majesty's Service has more patiently and uncomplainingly waited for years for some amelioration in its lot, than the Veterinary Department; but it now begins to discover that its virtues in this respect do not advance its claims one jot, and that years pass by without the slightest indication that its prayers are listened to. While every other department in the army has received ample consideration, and numerous warrants for their benefit have been issued since the last Veterinary Warrant of 1859, it would appear that nothing definite has yet been decided with a view to render this important branch of our land forces more popular, or to satisfy its reasonable requirements. This at least we gather from the reply of the Secretary of State for War to Captain Home's inquiry, in the House of Commons; and though some of the schemes alluded to have been for years before the authorities, yet it would seem that an indefinite period of time must still elapse before the army veterinary surgeons will be permitted to know what they are to receive, or even to hope for.

The unpopularity of army service for the members of the veterinary profession is very strikingly demonstrated by the fact, that there are now fifteen vacancies in the Department; and it is extremely probable that this number will be increased unless something is speedily done to make it more attractive. As matters now stand, no candidates who are worth having will present themselves, simply because they cannot live respectably on the pay allowed, and must spend a very large portion, if not all, of their own private means to maintain their position. If they have no means, and join the service, they will certainly quickly discover that they are in a very false and unpleasant situation. Now-a-days, the emoluments of civil practitioners are very different to what they were a few years ago, and many of them earn more in one day than their army colleagues receive as pay for a month, while their expenses are very much less. This enables them to provide much better and earlier for themselves, with a view to old age, than the army veterinary surgeon can ever hope to do, on his very meagre pension. And while the civil veterinary surgeon remains at his home, among his friends, and with every opportunity for social enjoyment and civic advancement, the army practitioner has no home, must spend many years of his life in foreign countries, and risk his health—even his existence—in unhealthy climates and on active service. Not only this, but however faithfully and zealously he may devote his life to the service of his country, in peace or in war, he knows from past experience that his services will go unrewarded and unrecognised, no matter how highly

they may be commended by those under whom he immediately acts. Honours and rewards he will see showered on those around him, and who may have no more claim than himself to recognition, while he remains a humiliating exception. Though army veterinary surgeons have served in nearly every war during this century, and have ever performed their duties with the greatest alacrity and skill, doing their utmost to ensure success, sharing the hardships and risks of their brother officers, and ready to yield their lives in the interests of the country, not one has ever been thought worthy of the least honour that can be bestowed; and while other departments have their good or distinguished service pensions, honorary retirements, etc., the veterinary surgeon has none of these, but must be content

"To lie in cold obscurity and to rot."

While all his brother officers, with whom he associates at mess and everywhere else, may be presented at Court, the army veterinary surgeon —even the head of the Veterinary Department—is denied this privilege, for some reason which has never, to our knowledge, been divulged; and this exclusion is most keenly felt by many as the greatest indignity which could be imposed upon them. Indeed, it is quite inexplicable why gentlemen who hold—and worthily hold—Her most gracious Majesty's commission as officers, are addressed as "Our trusty and well-beloved," and receive relative rank from that of lieutenant up to colonel, should be debarred from acknowledging their loyalty and devotion to the throne, and doing homage to their Queen, as other officers are permitted to do. The great improvement which has in recent years taken place in the education and status of the members of the veterinary profession—thanks to the efforts of the Royal College of Veterinary Surgeons—precludes the possibility of its best graduates joining the army, so long as the great disadvantages and disabilities under which the army veterinary surgeon at present labours exist. The army should secure the services of the most competent and promising men to which the Royal College grants its diploma; but these will not be induced to join until the pay, position, and prospects offered them are very materially improved, and the disabilities we have alluded to abolished. We earnestly hope, for the sake of the service, no less than that of those who have endured the unsatisfactory state of affairs so long and so patiently, that a fair measure of justice may be allowed the Army Veterinary Department without much longer delay. It is far from being a grateful task to ourselves to have to say anything which may deter good men from entering the army; but we deem it a duty, no less to the service than to the profession, to draw attention to the well-founded grievances which exist and the great dissatisfaction that prevails, with a view to their speedy removal. The remedy is in the hands of the Horse Guards and War Office, as well as in those of the veterinary profession.

THE SO-CALLED ENTERIC OR TYPHOID FEVER OF THE PIG.*

BY DR. KLEIN, F.R.S.

(*Continued from page* 48.)

BESIDES the intestine, the following lymphatic glands present very characteristic appearances : the mesenteric glands, especially those of the large intestine ; the bronchial glands ; the chain of glands along the thoracic (descending) aorta ; the sternal glands ; and the submaxillary lymphatic glands. The glands are much swollen, slightly firmer than normal, more or less red, in severe cases dark purple or even black, and when cut into letting a considerable amount of red fluid ooze out. At the same time it may be seen that the chief seat of red colorisation is the cortical part of the gland, from which it extends for a greater or smaller distance into the medullary part according to the greater or smaller severity of the change.

In a few cases we observed ulceration also of the organs of the throat. In one case these were symmetrical ulcerations of the mucous membrane of the gums and cheeks, of the front part of the tongue, of the hard and soft palate, and of the epiglottis. The ulcers were of a dark-grey colour ; and what was most conspicuous about them was their marvellously symmetrical distribution on the two sides of the above organs. In another case we found follicular abscesses in the soft palate ; they were very numerous, and the whole organ was much increased in thickness ; there was an extensive ulcer in the median line of the epiglottis next the free edge. In a third case we found ulcerations of the gums and cheeks, of the tongue and hard palate ; the soft palate contained numerous follicular abscesses ; the epiglottis and the mucous membrane at the entrance of the larynx showed hyperæmia and œdema. The epiglottis in addition was possessed with an ulcer. It is noteworthy that these three animals in which we found affections of the throat came all from the same place. In a fourth case, produced by inoculation of matter from intestinal ulcers into the skin, we found follicular abscesses of the soft palate, the organ being much swollen.

The morbid condition of the lymphatic glands is sometimes, to naked-eye inspection, very slight indeed ; besides the swelling of the gland there may be only what appears a slight hyperæmic condition ; but even here the microscope reveals in all cases a very characteristic state—namely, a bursting of bloodvessels in the cortical tissue, and hæmorrhage into the lymphatic follicles and sinuses of that part, amounting in severe cases to total destruction of the adenoid tissue by blood. In severe cases the medullary sinuses, and partly also the medullary lymphatic cylinders, become filled with extravasated blood. In so far this condition is similar to what is found in Anthrax. Now, this state of the lymphatic glands is, as I said, very characteristic, and, combined with the disease of the intestine, is of paramount importance for the diagnosis.

Further important symptoms, and which have not hitherto received due attention, are affections of the lung and serous membranes. Especially the lung-affection has shown itself to be as constant as any of the preceding—even more constant than that of the skin. The state of the lung is this : the slightest degree consists in a distinct mapping out of the lobes and lobules by œdema of interlobular tissue, the lung-tissue of the corresponding parts being at the same time hyperæmic. Then these parts become hepatised and transformed into a heavy, airless, red, transparent tissue ; and subsequently

smaller or larger opaque or white specks and patches appear in the red substance, and, as they increase in size, become gradually confluent. On a section it may be seen that this is due to the fact that the bronchial tubes become gradually filled up with a white, brittle, cheesy mass, progressing gradually from the finest ramifications on to the larger branches of the affected lobules and lobes. Finally the whole lobule is transformed into a discoloured, dry, hard, friable mass. The pleura of the corresponding parts is of course inflamed, being in some cases exceedingly thick, and covered with false membranes. In severer cases the greater part of one lung and portions of the other may be thus changed, and on the external surface there may exist smaller or greater ulcerations. Except in very slight cases there is generally a certain amount of pleural exudation ; and in severer cases the pleura contains a considerable quantity of a thick, offensive, yellowish or discoloured exudation. In some severer cases the pericardium is also inflamed, containing a large quantity of exudation, and its walls being much thickened by false membranes. The same is also the case with the peritoneum, this being in some cases hyperæmic in parts, or even covered with solid lymph and pus. We have had cases where there was no skin eruption, slight intestinal change, and extensive Pleuro-pneumonia, Pericarditis, and Pleuritis.

The next organ of importance is the spleen. The spleen is of dark colour and sometimes enlarged ; in some cases it appears not altered in size. In one case it was remarkably enlarged, having throughout it irregular nodular structures, from the size of a pin's head to that of a pea or even larger, whitish in appearance and of firm consistency.

The liver is in severe cases enlarged and very full of blood. The kidney is sometimes also changed : there is Hyperæmia of the pyramidal parts, and underneath the capsule, which may be easily stripped off, there are visible on the surface of the cortex hæmorrhagic round spots of the size of a pin's head, while similar spots, but scarcer, are met with in the cortex and pyramids. The severer the case the more numerous the hæmorrhagic spots.

Thus we may say that the skin, large intestine, lymphatic glands, and lungs are the organs most commonly affected, and that changes of the serous membranes, the spleen, liver, and kidney, and likewise of the organs of the throat, are of less constant occurrence.

C.—Microscopic examination.

(1.) *Skin.*—I have examined the microscopic character of those parts of the skin which show the diffuse redness, and in which the skin is at the same time thicker than in normal parts. The longer the animal lives the more swollen become these parts, as is best shown on the ear-lobes—the pendent parts of these becoming transformed into deep-red, thick, puffy masses, from the surface of which the epidermis peels in greater or smaller flakes. Not seldom are there to be seen smaller or larger roundish or irregular brownish blotches and scabs on the ear-lobes as well as groins and skin of haunch, which blotches and scabs correspond to a necrosis of the corresponding parts of corium. The microscopical characters are these : in the lighter cases, as in the earlier stages, the corium is œdematous, as is very beautifully shown in the skin of the ear-lobes near the apex by the exceeding distinctness of the lymphatic vessels and the distended interfascicular lymph-spaces which are easily traced to open into the lymphatic vessels. The blood-vessels of the corium (including arteries) are more or less distended and filled with blood or plugged with fibrin. Generally the fibrinous plug does not fill up the whole length or breadth of the vessel, nor does it present the ordinary aspect of fibrin in the bloodvessels—*i.e.*, a felt-work of fibres—but resembles a yellowish cylinder, of so dense a structure that the constituent fibrils are hardly distinguishable; other parts of the vessel contain blood. It

is clear from this that there has been existing in the vessels stasis of blood, and that this latter has undergone coagulation.

Around the vessels we find lymphoid cells ; besides these we find in some cases a very great number of large coarsely-granular cells very deeply staining in hæmatoxylin, with a relatively large, clear, vesicular nucleus ; the same cells will be mentioned as occurring in the intestine. The sweat glands are greatly distended, and often filled with blood more or less charged. The connective tissue of the corium contains, in a more advanced stage, in its distended interfascicular lymph-spaces, fibrinous exudations ; and in still later cases the tissue becomes more or less flooded with lymph-cells starting from around the vessels and extending into the interfascicular spaces. And finally the superficial parts of the corium change into a necrotic decolorised mass, the elements of which break down and are transformed into *débris*. On the ear-lobes, and also in other parts of the skin, I have seen the epidermis becoming very much thickened when the inflammation has reached a high degree.

(2.) *Intestine.*—The mucous membrane of the large intestine shows the following changes. The capillary vessels next the surface very much distended and filled with blood, occasionally ruptured, so that blood is extravasated in the mucosa underneath the epithelium. Generally the epithelium at the mouth of Lieberkühn's crypts is detached and in the act of breaking down. The same is the case with the epithelium covering the mucosa around the mouth of the crypts ; at these places the epithelium is raised from the mucosa by the presence of cavities filled with fluid, in which are suspended cells, granular matter, and blood. The epithelium of these parts is quite different from the normal condition, the cells being much shorter, and their nuclei swollen up ; this leads to the cells breaking up into small elements ; and finally the epithelium is altogether discharged. The mucosa is at the same time much thickened by the presence of lymph-corpuscles. The lymph spaces around Lieberkühn's crypts are distended. In the superficial parts of the mucosa, as well as in the submucosa, there are in most parts present large uninuclear cells, which are conspicuous by their coarse granulation, and staining very deeply blue in hæmatoxylin. They are present also in great numbers in the connective tissue of the lymphatic glands, and also occasionally in the skin (see above). In the mucosa of the large intestine, and in the lymphatic glands, they are seen to be of the most different shapes : spherical, oval, spindle-shaped, branched, or irregularly drawn out ; and this difference in shape makes it very probable that the cells in question are amœboid. The Lieberkühn's crypts are, as a rule, filled with mucous secretion ; the cells of the epithelium, especially in the outer portion of the crypts, are goblet-cells filled with mucus. In parts more affected the epithelium of the crypts is loosened, and at some places perfectly removed from the glands. In other glands the nuclei of the epithelial cells are enormously enlarged, and the cells changed into spindle-shaped or irregular bodies. In this condition we find the mucous membrane over most parts of the large intestine. In some cases there is copious hæmorrhage in the submucosa, or rather the lymphatic vessels of the submucosa are very much distended and filled with blood—derived, no doubt, from broken vessels. In that blood we find, however, hæmatoidin crystals, and besides, a peculiar arrangement of the blood-corpuscles ; these are arranged around larger or smaller spherical masses, which possess a very uniform and finely granular aspect.

The muscular coat of the intestine is also much swollen, varying to œdematous condition. The fat cells of submucous tissue are mostly filled with a mucous matter.

From the above condition of distension of bloodvessels, loosening and

partial or total removal of epithelium, we have all intermediary forms to the necrosis and disintegration of the most superficial portions of the mucosa, commencing as very small circumscribed opaque spots in which the tissue is disintegrating, and rapidly increasing in breadth and depth. There is no doubt whatever that the "ulcerations" of the large intestine are merely due to a necrosis of the most superficial part of the mucosa. That part in which the necrosis started remains, as has been mentioned, discernible for a long time as a more or less well-defined speck, around which successive new layers of mucosa have more or less concentrically undergone necrosis.

The submucosa shows at the same time, next the *muscularis mucosa*, a reactive inflammation ; being full of pus-corpuscles. As the necrosis spreads, the infiltration of the deeper parts with pus-cells increases. Generally the *muscularis mucosa* seems to be the boundary up to which the necrosis proceeds. In some cases, however, the corresponding part of the submucosa appears likewise involved in the process.

From and even before the first signs of necrosis of the mucosa—viz., when the epithelium begins to break down and be shed from the surface—there are found masses of micrococci, which in some ulcers occupy a great portion of the *débris*. Also ova of nematode worms I have found in the *débris* of some of the smaller ulcers.

What we have said hitherto is, I think, quite sufficient to convince any one that the "ulceration" of the mucosa of the large intestine in the pig has absolutely nothing in common with the ulceration of the intestine in Typhoid Fever of man ; the latter being a process entirely limited to the lymphatic follicles of the intestine, which have previously become highly inflamed and hypertrophied.

There are several other points which must be mentioned here, both of great histological interest, and also because of their importance to a right interpretation of the naked-eye appearances of the disease. In some cases, when the ulcerations of the intestines are very numerous, the solitary lymph-follicles are seen to be enlarged and peculiarly changed. On the naked-eye inspection, we perceive in those cases, in the mucous membrane, translucent spherical nodules, from about the size of a pin's head to hemp-seed, or larger, which possess an opaque white centre. Examining them under a microscope, we find that in the submucosa there is a larger or smaller saccular cavity, lined by columnar epithelium, and filled with more or less broken-down pus-cells, mucous matter, and granular *débris ;* the wall of the sac, containing a few rudiments of Lieberkühn's crypts, is surrounded by adenoid tissue ; the cavity of the neck is in communication with the free surface of the intestine by a broad canal, occupied by a plug of the same substance as found in the cavity. The plug of the neck and sac generally falls out during preparation. Mr. W. A. Shoolbred, late of St. Bartholomew's Hospital, who examined for me these structures in mucous membrane less changed, found the following : There exist numerous flask-shaped invaginations of the mucosa into the submucous tissue, which flask-shaped cavities are lined by epithelium like the mucosa ; the body of the flask situated in the submucosa contains Lieberkühn's crypts like the other parts of the mucosa, with the difference that they are much larger at their blind ends. The flask-shaped invaginations are, as a rule, imbedded in, or surrounded by, a lymph-follicle.

Now it is easy to understand the above condition described as translucent nodules with an opaque centre. One has only to bear in mind—that when the mucosa of the surrounding parts is much inflamed, the cavity and neck of the flask-shaped bodies become filled with pus-cells (gradually breaking down), mucous and granular *débris ;* that under these conditions this cavity becomes more and more distended ; and that also the Lieberkühn's follicles

in their wall, through stretching, become gradually lost. The tissue of the lymphatic follicle becomes compressed into a narrow zone as the flask-shaped body becomes more distended. Where, however, the flask-shaped bodies do not become plugged up, we find this condition,—abundant mucous secretion taking place in the Lieberkühn's crypts of the neck, enlargement of the lymphatic follicle around the body of the flask-shaped gland, and penetration of the adenoid tissue into the cavity of the gland, the progressing adenoid tissue, however, breaking down when in the cavity of the gland. At these places the epithelium of the bottom of the Lieberkühn's crypts appears to be changed into a uniformly granular mass, with numerous nuclei; the outlines of the individual epithelial cells having disappeared, these masses split into several "giant cells"—*i.e.*, huge granular masses—with a great number (five-and-twenty, or more) of small vesicular nuclei; whether these giant cells originate from the epithelium of the Lieberkühn's follicles in the manner just described or not, it is certain that at these places the lymph-follicle contains them. But also in other parts of the intestine I have seen "giant cells,"—that is to say, where the intestinal mucosa has been moderately thickened, and the surface epithelium at some places has become disintegrated, I have observed in the distended lymph-spaces around the Lieberkühn's follicles, huge cylindrical or irregular-shaped, finely and uniformly granular masses, at one peripheral place of which were imbedded very numerous small elliptical or staff-shaped or spindle-shaped nuclei, deep stained in hæmatoxylin. The corresponding crypts were much changed, the epithelium being transformed into a thin granular layer in which the nuclei might still be seen, and the cavity of the crypts being distended at some places, and containing masses of lymph-cells, which, however, were in the act of disintegration. Generally at the place where the "giant cell" was found, the wall of the crypt was seen to be broken, and in communication with the lymph-space around. Similar giant cells I have found in lymph-spaces in the deeper parts of the mucosa, even extending into the submucosa through the *muscularis mucosæ;* and finally, near the epithelium of the surface, where they presented, however, more the round aspect of "giant cells,"—*i.e.*, their nuclei more like vesicular structures, and distributed through the greater part of the centre. I find the giant cells not in all cases, but chiefly in those in which the above-named nodular structures (*i.e.*, swollen flask-shaped glands and enlarged lymph-follicles) are numerous; and generally they are to be found not far from parts containing the flask-shaped glands and lymph-follicles.

With regard to the ulcerations of the mucous membrane of the mouth, gum, hard palate, and tongue, I have to state that here also the ulceration consists in a necrosis of inflamed mucous membrane, in a breaking down of the superficial parts of the mucosa into a coloured *débris*.

There is one more point which I believe deserves careful attention. In the ulceration of the tongue just mentioned, and at a time when the superficial scab has not become removed, I have seen masses of micrococci situate chiefly in the tissue of the papillæ, but at some places reaching as far deep as the inflammation extends. That they are micrococci was proved by their forming lumps of uniform granules; these lumps stain deep purple-blue in hæmatoxylin, and are thus very conspicuous, and besides resist the action of caustic potash, with which all the rest of the tissue disappears. These heaps of micrococci in locality correspond to the papillæ, and are on the surface of the scab, but underneath the covering epithelium, some parts of this having changed into a dry, hard, discoloured mass, others containing larger or smaller vesicles filled with fluid.

In the soft palate we generally find the lymphatic follicles greatly increased, and the mucous glands much inflamed and infiltrated with pus-cells; the

number of these latter increasing, the tissue of the mucous glands becomes destroyed, and minute abscesses are formed, which discharge their contents through the duct of the mucous gland, which duct has naturally become greatly distended.

(3.) *Lymphatic glands.*—Corresponding to greater or lesser redness of the lymphatic glands, we find the cortical parts occupied by greater or smaller masses of blood, the adenoid tissue becoming at the same time destroyed. But this destruction, of course, depends on the amount of blood present. In the most acute cases, we find not only great portions of the cortical follicles transformed into an almost uniform red mass (*i.e.*, swamped with blood), but also some of the medullary cylinders saturated with it. All the lymph-sinuses are in this case also filled with blood, and hence a very striking appearance is produced in some parts ; the adenoid cylinders being still intact, while the lymph-sinuses between them and the connective-tissue trabeculæ are much distended, and filled with blood. We may say we have in some parts a very good injection of the lymph-channels with blood. In the cases in which I found (as above mentioned) in the extravasated blood of the submucosa of the intestine the peculiar spherical granular lumps, I met also in the lymph-sinuses of the medulla the same spherical granular lumps. In some mesenteric glands, some of the cortical as well as medullary sinuses are filled and distended by fibrin and granular *débris*, which materials also extend on to the adjacent adenoid tissue. I have seen glands in which large portions of the adenoid tissue were entirely replaced by fibrin and granular *débris*.

In the glands from cases of somewhat longer duration, and where there has been extravasation of blood into the cortical adenoid tissue, we find the latter in general considerably hypertrophied, and the lymph-sinuses filled with cells of different sizes and aspect. In mesenteric glands of some cases, I have found enormous numbers of the giant cells filling up the lymph-sinuses of the medulla. These "giant cells" I can trace down to small granular cells, with two or three elliptical clear nuclei, looking very much like epithelial cells. A very striking appearance is produced in some parts, when the lymph-sinuses of the medulla contain giant cells of various sizes, closely arranged one at the side of the other ; some of the larger ones, containing twenty, thirty, and more nuclei, seem to break down at their edges into small granular fragments. The connective-tissue trabeculæ contain ordinary lymph-cells, and in some cases a great number of the coarsely granular deeply-stained wanderers.

(4.) *Organs of Respiration.*—As has been mentioned, the epiglottis showed ulcerations only in a few cases. I have before me preparations through the epiglottis, the submucosa of the posterior surface being in a state of necrosis, and near the edge so broken down as to leave there a deep ulcer, while the mucous membrane of the anterior surface is only slightly inflamed in its submucous tissue : in this I find lymphatic vessels filled with micrococci—*i.e.*, uniformly granular masses stained conspicuously blue by hæmatoxylin, the "granules" becoming more distinct after treatment with caustic potash.

In addition to what has been said of the changes presented by the lungs, I have to mention that the lung is the seat of lobular Pneumonia,—the walls of the air-cells thickened by round cells, and the cavities of the former containing lymph-cells, changed epithelial cells, and in some instances also smaller or larger "giant cells." In the last stages, or higher degrees, the inflamed tissue becomes transformed into a necrotic disintegrating mass. In the infiltrated, firm, more or less disintegrating parts, I find great masses of micrococci filling up capillaries and veins, and also contained in lymphatics around arteries. They may be found also in minor bronchi which have become completely blocked up by cheesy, inflammatory products ; but there

the masses of micrococci, conspicuous by their blue coloration in hæmatoxylin preparations, are generally present, in greater or smaller lumps, between the outer surface of the plug and the wall of the bronchus. In one case I found ova of nematode worms in the tissue of the inflamed parts, and in the larger bronchi bundles of the worms themselves.

The pleura is much swollen, and contains great numbers, continuous layers, of lumps of micrococci. The free surface of the membrane is in many parts covered with them. The exudation fluid is also charged with them, as has been mentioned above. The lymphatic vessels of the surface of the lung—the subpleural vessels—are greatly distended, and filled with fibrin ; also the different trunks situated in the septa of the lobes.

With regard to other organs, as particularly the liver, spleen, and kidney, my investigations are yet too incomplete for me to make definite statements ; except, as regards the liver, that its interlobular connective tissue is greatly altered, by infiltration with lymph-corpuscles, which at some parts form considerable accumulations, amounting almost to nodular new growths. Similar accumulations of lymph-cells may be observed within the acini of the liver of more advanced cases.

THE FELLOWSHIP DEGREE OF THE ROYAL COLLEGE.

IT gives us unfeigned pleasure to announce the addition of five names to the list of Fellows of the Royal College of Veterinary Surgeons. Messrs. Poyser, Hunting, Hopkin, W. A. Taylor, and Briggs, have obtained this degree *by examination;* and we heartily congratulate them, not only on the satisfactory manner in which they passed the necessary tests, but also on being the first to offer themselves as candidates for this distinguished honour. We trust that many will now follow their example, and that all who are desirous of raising their profession will not hesitate in giving proof of this most worthy object by obtaining the higher degree, which should, and no doubt will, be a guarantee that its recipient is possessed of and actuated by true professional feeling. The degree of Fellow is an honourable distinction, as well as an evidence of sterling merit, and is the highest means by which the veterinary profession in this country can reward true worth and stimulate advancement—individually and collectively. Shakspeare eloquently speaks of

> "Degree, that ladder to all high designs,
> Without whose aid all enterprise is sick."

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING, HELD JUNE 18TH, 1877.

Present—Col. Sir F. Fitzwygram, President, in the chair ; Professors Brown, McCall, Pritchard, and Simonds ; Messrs. Batt, Blakeway, Cartledge, Cartwright, Cuthbert, Dray, Fleming, Gowing, Greaves, Harpley, Hunt Moon, W. Smith, P. Taylor, Withers, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Letters were received from Professor Williams, Professor Walley, Mr. Jas. Collins (dated from Manchester), Mr. Balls, Mr. Cox, and Mr. Reynolds; also from Mr. Talbott (who was subpœnaed on the jury at Westminster), regretting their inability to attend the meeting.

Letters were also received from Professor McCall, Professor Walley, Mr. H. J. Cartwright, Mr. William Smith (Norwich), and Mr. Withers, returning thanks for the honour of their election as Vice-presidents.

A letter from Mr. Withers returning thanks for his re-election as Vice-president and Treasurer, and also for the unanimous vote of thanks passed by the Council for his services as treasurer.

A letter from Mr. Philipson, Market Square, Kingston-on-Thames, who stated that on inquiry he found that only the letters V.S. were written against Mr. Aspin's name, and that it was a mistake made by the young man who was collecting the names. He stated that he regretted the error, and that he would have it rectified in the next issue of the local Directory.

Election for Examiners.

On the election of the examiners for the first examination in Materia Medica and Pharmacy,

Professor SIMONDS asked whether the Council had taken into consideration the necessity of two courts of examiners sitting up to the end of next year, because provision must be made by the newly-elected Court for the examination of a considerable number of students under what might be called the old system. The new students who came in in October last, not only in the London but in the Edinburgh schools, were of course subject to the new regulations. He presumed they would have to be examined by the new Court of Examiners, and they would have three ordeals of that description to go through, while the others had only two ordeals to undergo, and that without any alterations upon the manner in which the students had hitherto been examined. He simply wished to know whether the Council understood that matter.

The PRESIDENT said he imagined the Council fully appreciated the fact that there were two distinct sets of examinations up to the time agreed upon —namely, Christmas, 1878; and out of this new Board of Examiners would be appointed a Board who should sit under the old system.

Professor SIMONDS asked whether it would not have been more in accordance with custom and compliment to the old Board of Examiners to have retained their services rather than to have elected an entirely new Court.

Mr. HUNT said that the new court would be able to carry out examinations on the old system.

The PRESIDENT said that as the old court had been called upon to resign, they had no present existence.

The election was then proceeded with.

In the course of the election for Chemistry and Toxicology,

Professor SIMONDS said that the new members of the Council did not seem to him thoroughly to apprehend this scheme. They ought to be informed that under the old system there were two examiners at the chemical table, and also two examiners at each of the other tables; but according to the new scheme there was to be one examiner and one table, and there was to be one examiner upon chemistry, one upon materia medica, and one upon botany, and so on. He held that this was wrong in principle, and he had taken the trouble some time since to give notice that he should, as early as possible, move that there should be two tables for the first examination, and that there should be two examiners at each table. By the proposed system, a responsibility was thrown upon one examiner

which certainly ought not to be thrown. There would also be a considerable amount of work, and there would be no record whatever of the subjects that the student would be examined on.

Mr. HARPLEY rose to order. The subject before the meeting was the appointment of a Board of Examiners, and not the discussion of the scheme.

Professor SIMONDS said that the new members of the Council were being led blindfolded, as they did not understand the scheme. It was right that they should know what they were voting for. The whole interest of the profession and of the students was made to bend down simply on account of the financial condition of the College; and he contended that there was no occasion for it, because the Royal College could be supported as it ought to be supported, and it would have sufficient income if a proper scheme were carried out, which would give satisfaction not only to the London school, but also to the other schools. So far as he was aware, the other schools were just as strongly opposed to the new scheme as the London schools. By electing Dr. Voelcker the Council would be shelving Dr. Taylor.

Mr. GOWING said that Dr. Taylor, in his letter, entirely declined to officiate further as an examiner.

Professor SIMONDS said that was simply because he objected to one examiner. The matter had been discussed in the Court of Examiners, and they objected to it.

Mr. GOWING said that the only means of lessening the expenditure was by having one examiner.

Professor SIMONDS said he was perfectly aware of that, but he thought it was a mistake.

Mr. GOWING wished that Professor Simonds had been on the Committee, in order that he might better have regulated the finance, and have put the Council in the position of having two examiners on the table, because he agreed with Professor Simonds that two would have been better than one.

Profossor SIMONDS wished he had been on the Committee; not only that, but he wished that all the teachers, not only of the London school, but also of the Scotch schools, had been on the Committee. If a joint committee of examiners and teachers and members of the Council had been formed, things would have been properly arranged. But the Committee had legislated for the examination of students without knowing the feeling of the examiners, and without in any way taking the experience of men who had spent their lives in examining. He knew the examiners were decidedly opposed to the scheme. Dr. Voelcker and Dr. Taylor said they were opposed to it, although they would give it a trial.

Mr. WITHERS asked how the Council were to get out of their financial difficulty?

Professor SIMONDS said that he had put forward a scheme which, he contended, would work satisfactorily, notice of which had been given three months ago. He had proposed certain changes with regard to bye-laws and regulations applicable to students, and those regulations would allow twelve students to be examined in a quarter of an hour; but the President took a strong objection to the quarter of an hour, because seven and a half minutes—dividing the time between two examiners—was insufficient to get a student's knowledge of a subject, instead of ten minutes. He had thought the matter over, and was prepared to give twenty minutes at each table. The whole of the difficulty could be got over in this way.

In answer to Mr. P. TAYLOR,

Professor SIMONDS said that the examiners objected to one examiner at each table, because it would be over-work to the examiner. Who could do

justice to any subject by taking twelve men and examining them for a quarter of an hour each?

The PRESIDENT said that this scheme had been under consideration for upwards of a year and a half, and was finally adjusted in August 1876, so that he hardly thought the Council had been led blindfold.

Professor SIMONDS said there were new members of Council since then.

The PRESIDENT said that the new members had no doubt read the report of the Council, and he would do them very great injustice if he supposed they had come to the Council uninformed. However, he would not stop the discussion. He would only point out that the Council were now electing examiners under a scheme which it had agreed upon some considerable time ago. After the Board of Examiners was elected, it was quite open to Professor Simonds to make any motion and re-arrange the tables. As to the injustice to the old examiners, no doubt a notice was sent out some time ago requesting them to resign, because it was felt that it was necessary to have a new Board, and that there would not be so many examiners required under the new system as under the old scheme: it was therefore thought better that an entirely new Board should be elected. Dr. Taylor had resigned because he did not approve of the extra work at the same pay. He was afraid that that was a necessity of the financial position of the Council.

Mr. GREAVES said that the scheme was not one that had been agreed to suddenly: it was the outcome of various discussions at the Council for several months, and he gave it his entire approval.

The election was then proceeded with.

On the election of examiners for the Second Examination,

Professor SIMONDS said he would move that, in place of having three examiners and three tables respectively for anatomy, histology, and physiology, there should be two tables and four examiners, and that histology and physiology should be examined for at the same table. It was more than one examiner could do to examine students throughout the whole night upon the anatomy of domesticated animals. Two examiners would be required for the anatomical examination, and two for physiology and histology. It was well known that histology was an essential part of physiology, and he could not see how the two were to be separated.

The PRESIDENT said he could see no objection to the scheme. It was quite a financial question, and if the Council could see their way to afford the expense of a fourth examiner, he thought it would be a desirable thing, because anatomy was a large subject.

After some discussion, in which Mr. Gowing, Mr. P. Taylor, and Mr. Wm. Smith took part, Professor BROWN seconded Professor Simonds' amendment.

Mr. HARPLEY suggested, as a way of getting out of the difficulty, that two examiners should be appointed for the anatomy of the horse and other domesticated animals, and one examiner should be appointed for physiology and histology. He had had a conversation with Professor Turner, in London, who said that there would be no difficulty for one examiner to take the subjects of physiology and histology, and that he was willing himself to do so. Thus the number of examiners would not be increased.

Professor BROWN thought that Mr. Harpley's proposition was a great improvement on the original scheme. So far as his own observation went, physiology and histology might be taken together; and if the amendment took that shape, he was quite ready to vote for it.

Professor Simonds' amendment, as altered by the suggestion of Mr. Harpley, was then put and carried unanimously.

The election was then proceeded with.

On the election of examiners for the Third or Final Examination,

Professor SIMONDS thought there was almost an absolute necessity for taking a portion of toxicology over to the third examination, with a view of making the students as practical as possible in the dispensing of medicines. It was better that students should be able to compound balls and draughts properly, and to write prescriptions; and that being a practical matter, he thought that toxicology ought to go into the third examination. This would be found to work satisfactorily, and it would not increase any expense the College might be put to. He meant that part of toxicology which belonged to the detection of poisons during the life of the animal and on *post-mortem*—not simply the chemical part, but also the recognition of symptoms. Of course, if toxicology were added, one table and two examiners would be required, instead of one table and one examiner, because there were three subjects to be examined into. He also proposed that after the words "writing of prescriptions and certificates," the words should be added, "and dispensing medicines."

After some conversation it was ultimately agreed that the words "and Pathological Toxicology" should be added after the word "Pathology," in clause 8 of the Educational Committee's report; and that the words "and in dispensing medicines" should be added after the word "prescriptions."

The election was then proceeded with.

The following are the examiners elected for the tables at the different examinations :—

FIRST EXAMINATION.

ENGLAND.	SCOTLAND.
Chemistry and Toxicology.	
Dr. A. Voelcker.	Dr. Alexr. Crum-Brown.
(Twelve students examined.)	
Materia Medica and Pharmacy.	
Professor Duguid.	Dr. Jas. Dunsmure.
Botany.	
Professor Bentley.	Dr. Alexr. Dickson.

SECOND EXAMINATION.

Physiology and Histology.	
Dr. J. Burdon Sanderson.	Professor Turner.
(Nine students examined.)	
Anatomy.	
Mr. Geo. Fleming.	Mr. Geo. Fleming.
Mr. Wm. Robertson.	Mr. Wm. Robertson.

THIRD OR FINAL EXAMINATION.

Morbid Anatomy, Pathology, and Pathological Toxicology.	
Mr. Geo. Fleming.	Mr. Geo. Fleming.
(Twelve students examined.)	
Diseases of the Horse, Veterinary Medicine, Surgery, and Therapeutics.	
Mr. M. J. Harpley.	Mr. B. Cartledge.
Mr. Wm. Robertson.	Mr. J. Harpley.

ENGLAND.	SCOTLAND.
Practical.	
Mr. M. J. Harpley.	Mr. B. Cartledge.
Mr. Wm. Robertson.	Mr. J. Harpley.
Diseases of the other Domesticated Animals, Veterinary Medicine, Surgery, and Therapeutics.	
Mr. T. W. Mayer.	Mr. Alexr. Robinson.
Mr. R. L. Hunt.	Mr. R. L. Hunt.
Practical.	
Mr. T. W. Mayer.	Mr. Alexr. Robinson.
Mr. R. L. Hunt.	Mr. R. L. Hunt.

Election of Board of Examiners for New Fellows.

A discussion arose as to whether the Board of Examiners should consist entirely of veterinary surgeons, or whether they should be elected from outside the profession.

Mr. FLEMING thought that the profession should retain as far as possible the power of examining in their own hands. He would therefore move that they should not go outside the profession to appoint the examiners.

Professor SIMONDS agreed in substance with what Mr. Fleming had said, but he could not see how examiners could be found in the profession to examine on so many varied subjects as Physiology and Comparative Anatomy, Pathology, Therapeutics, Surgery, Sanitary Science, Dietetics, and Epizoötology.

Mr. HUNT was of opinion that the professors should be the examiners.

Mr. FLEMING thought that the examiners should also be Fellows, because they would have a larger interest in retaining the integrity of the motives which led to the degree being founded.

The PRESIDENT said there was nothing in the Charter to prevent the professors being the examiners. The only provision was that no professor of the same college to which the students belonged should be the examiner. There was now nothing at all to interfere with the electing of a professor, even although he might belong to the same college as that to which the student had belonged in former days; because the clause in the Charter only referred to the diploma, and not to the new and higher degree.

Mr. PETER TAYLOR asked if it would not produce a certain amount of jealousy between the professors? If a veterinary surgeon from Edinburgh were examined by the London professors, or *vice versâ*, it would produce a certain amount of feeling if he were rejected.

Mr. CARTLEDGE thought the most practical men were the Fellows, and he did not think it justice to ask the professors to be examiners of practical men.

Mr. HUNT said there was no law against it, and the Council had a right to exercise their privilege if they chose.

The PRESIDENT said there was nothing to prevent it.

Professor PRITCHARD was doubtful whether there was any member of the medical profession who would undertake to examine on such wide subjects.

Mr. FLEMING had not the slightest doubt that in the ranks of the profession there would be found men who could examine on any one of those subjects—at least, to the extent which the profession would think necessary for the examination for the degree. It seemed to be lost sight of that a certain amount of the examination was written, which would be a great advantage to the examiners. He would move that the Board of Examiners be selected from the members of the profession.

Mr. PETER TAYLOR seconded the motion, which was carried, Professor Simonds dissenting.

The following candidates were then nominated :—

Mr. FLEMING,	proposed by	Mr. Withers,	seconded by	Mr. Cartwright.
Mr. HARPLEY	,,	Mr. Taylor	,,	Mr. Hunt.
Prof. BROWN	,,	Mr. Batt	,,	Mr. Hunt.
Prof. WILLIAMS	,,	The President	,,	Mr. Hunt.
Mr. COLLINS	,,	The President	,,	Mr. W. Smith.
Prof. MCCALL	,,	Mr. Harpley	,,	Mr. Fleming.
Mr. ROBERTSON, of Kelso	,,	Mr. Greaves	,,	Prof. McCall.
Prof. PRITCHARD	,,	Mr. Harpley	,,	Mr. Dray.
Prof. SIMONDS	,,	Mr. Hunt	,,	Mr. Dray.
Prof. WALLEY	,,	Prof. Simonds	,,	Mr. Dray.

Previous to the ballot being taken, Mr. TAYLOR proposed, and Mr. FLEMING seconded, "That the Examiners for Fellowships should be Fellows."

The PRESIDENT moved the previous question. In a few years' time, he said, when there would be a large number of Fellows, there might be a good reason for selecting the examiners from amongst the Fellows, but he thought it was too early to do so now. He thought they should get the best examiners they possibly could, and that at present they would act injudiciously in drawing a hard-and-fast line.

The President's motion was carried by a majority of 9 to 4.

The PRESIDENT moved that there should be four Examiners. Mr. DRAY seconded the motion, which was carried.

On the motion of the PRESIDENT, seconded by Mr. FLEMING, it was also agreed that the Board should be elected for one year.

The ballot was then proceeded with, and the following was the result :—

	Votes.		Votes.
Mr. Fleming	11	Prof. M'Call	5
Mr. Harpley	7	,, Brown	4
Prof. Williams	6	,, Simonds	3
Mr. Collins	6	,, Pritchard	2
Mr. Robertson	6	,, Walley	2

Professor Williams, Mr. Collins, and Mr. Robertson, having an equal number of votes, were again balloted for, and in the result it was found that Professor Williams had 11, Mr. Robertson 7, and Mr. Collins 5 votes.

The PRESIDENT then declared Mr. Fleming, Mr. Harpley, Professor Williams, and Mr. Robertson duly elected.

The PRESIDENT said a question arose, the New Board of Examiners having been duly elected, how the arrangements were to be carried out next July and next Christmas under the old and new systems of examinations, because the old system of examination was not exactly the same as the new. He proposed that a Committee should be appointed to adjust the new examinations, and to carry out the old examination.

Professor SIMONDS thought the simpler plan would be to request the old examiners to act, because it would be invidious to put them on one side. There were no less than 96 names down for examination in July. No doubt some of these would be disqualified from insufficient attendance, and others would be rejected at the Preliminary Examination by the Professors; but in Class B there were 28 to be examined for the diploma of the College, and in Class A, 27,—so that there were 55 names down for examination. Those were under the old system in the School. What might be the condition

with regard to Scotland he could not say, but there was a relative proportion of students to be examined under the old system, both in Glasgow and in the two Edinburgh schools. He thought the best, simplest, and most dignified way of solving the problem would be to request that the examiners should continue their services until the old system ceased, which would be in July twelve months. From the four schools he supposed there would be about 60 students to be examined by the new examiners for the First Examination. He would leave the matter entirely in the hands of the Council. He moved as an amendment, "That the old Court of Examiners be requested to officiate until such time as the old system expired."

On being put to the vote the amendment was lost, and the motion for the appointment of a committee was declared carried.

A committee was then appointed consisting of Professor Simonds, Mr. Fleming, Mr. Harpley, Mr. Collins, and Mr. Dray.

Adjourned till next day at 5 o'clock.

ADJOURNED SPECIAL MEETING OF COUNCIL, HELD JUNE 19TH, 1877.

Present—Col. Sir F. Fitzwygram, President, in the chair; Professors Brown and Simonds, Messrs. Cartwright, Dray, Greaves, Harpley, Taylor, Woodger, and the Secretary.

The SECRETARY read over the list of examiners who had been appointed on the previous day.

The PRESIDENT moved that in regard to the Second Examination the examiners be allowed twenty minutes. There would, he said, only be three examiners,—the same number as in the previous scheme,—and there would be two tables instead of three. The time would not be exceeded, and the expense would be the same. There would be nine students examined instead of twelve, which would add slightly to the expense. He did not think, considering the subjects, that twenty minutes would be too much.

Mr. DRAY seconded the motion, which was carried.

The examinations for the Fellowships were arranged to take place in London after the usual examinations.

On the motion of the PRESIDENT, seconded by Mr. P. TAYLOR, it was resolved that the amount of fee to be paid to each examiner be four guineas.

The Secretary submitted the form of papers for the new examinations in July, which was adopted and ordered to be printed.

The SECRETARY said that Mr. Gregory and Mr. Lupton had not yet transmitted their Fellowship fees, although they had been written to in April last; neither had Mr. Collins in India, who said he would instruct his agents to transmit his fee.

The Secretary was instructed to write to Messrs. Gregory and Lupton for immediate payment.

It was decided that the charge for the New Register be 1*s.* 6*d.* together with the postage.

With reference to the concluding recommendation of the report on income and expenditure, the following letter had been received since the meeting of the Council, from Mr. Loch :—

"8, Great George Street, Westminster, S.W., June 1st, 1877.

"MY DEAR SIR FREDERICK,—I had the pleasure of receiving your letter of the 25th ultimo, when I happened to be out of town. In reply to the question put in it, as to whether the Council of the College could, in addition to the charge of ten guineas for diploma, also charge one guinea for registration, I would say that the latter charge would, in my opinion, be in excess

of their power. The language of the Charter is very explicit, declaring that no fee or fees for admission as a member of the College shall at any time exceed ten guineas.

"I am, yours very truly,

"Col. Sir F. Fitzwygram." "W. A. LOCH.

Professor SIMONDS took exception to one of the recommendations of the Committee—that there should be only two examinations in the year. The July examination could not be abolished, because the students entered in October, and they had to attend three terms before they were eligible for their examination. There were two winter terms and one summer term, which brought the first examination in July. Then the second examination was in April, leaving two terms for the students to acquire anatomy and physiology, which could only be properly taught during the winter months. Then, again, there were three terms before a student was eligible for his final examination, which would be in the following April, taking the summer and the two succeeding winter terms. Therefore, April and July could not possibly be abolished. It seemed to him that the Committee had possibly in their mind the abolition of the examination in December. But what would be the result? A student who came in in October was eligible for his first examination in July; and if he failed in that examination simply upon chemistry or botany, or materia medica or pharmacy, he could not, if the Christmas examination were abolished, be again examined until the following April. He contended it was absolutely necessary for the scheme that there should be three examinations. There could be no possible loss to the College, because its income was derived from the fees paid by the students. Supposing all the men presenting themselves on one or two nights in the December examination were men who were rejected in the previous July, these being called upon to pay three guineas for re-examination, the same sum would be paid into the coffers of the College as if they were fresh men and had never been examined before. He contended that, in common justice to the students and to the interests of the Royal College of Veterinary Surgeons, the December examination ought not to be abolished.

The PRESIDENT said he was not aware of any school or college that arranged its scheme of examination in the interests of rejected students. It was quite out of the way to call upon an examining body to make its examinations in the interests of the idle student who did not choose to profit by the usual system of instruction. Secondly, it must be remembered that the College for a good many years had only had two examinations a year. The third examination was only set up about five years ago; therefore going back to the state of affairs that existed in former years could not be a very great grievance to the students or the College. Thirdly, he was enabled to state that the three Scotch schools felt that three examinations a year broke up the course of their instruction, and they would be enabled to give a more practical, thorough, and complete course of instruction if it were continued straight through the year. There was also, he believed, a strong feeling in the same direction on the part of the governors of the school which Professor Simonds represented. For these reasons, he thought the recommendation of the Committee might be safely adhered to.

Professor SIMONDS said the President was quite right as to the two examinations in bygone years; but a third examination was found to be necessary, and, if he remembered rightly, the new code of examination and all the arrangements were drawn up by Sir Frederick and himself, and Sir Frederick at the time saw the propriety and necessity of the December examination; he was astonished, therefore, that the President could not see the propriety of it now. With regard to the remark as to encouraging idle

students, it must be borne in mind that students were rejected from various other causes than that of idleness or want of knowledge. A man was often exceedingly nervous; and it very frequently happened that the best men were rejected. With regard to the interests of the Scotch schools, it ought to be borne in mind that the English schools had about as many students as the three Scotch schools put together; and having such a large number of students to deal with, it was only fair that they should try as near as they possibly could to give them full and fair justice.

Mr. HARPLEY said that one of the disadvantages the Council laboured under was that they had been unable to secure at their committees the attendance of Professor Simonds. Of course the reasons why he did not accept the invitations to attend were only known to himself; but it was a most unfortunate thing that Professor Simonds allowed these reports to be matured by committees and to be placed on the Council table, and then at the eleventh hour attempted to upset them.

Professor SIMONDS said he had his own private reasons for not attending the committees. Although he was there as a member of the Royal College of Veterinary Surgeons, still he could not forget the other position he occupied in connection with the Royal Veterinary College, nor could he forget the interests of the students that were committed to the care and keeping of the professors there.

Mr. GREAVES also regretted that Professor Simonds had not been present at the committee meetings to offer suggestions. The report had been fairly and dispassionately considered by the Committee, and he was entirely in favour of the scheme being carried out.

The PRESIDENT, in reply to Professor Simonds, said that, as far as he knew, the third examination was conceded at the wish of the Scotch schools, and rather in opposition to Professor Simonds' wishes at the time.

Professor SIMONDS said there were two examinations previous to the new scheme being concocted, and these two were in April and December; and the examination which was asked for was the July examination, in consequence of the introduction of the Summer Session. The examinations were always held in April and December, and the students who were rejected came up in December; but when the Summer Session was instituted, it was found that the scheme could not possibly work unless there was an examination in the summer, and then the summer examination was added.

After some further conversation,

Mr. HARPLEY moved, "That this recommendation of the Committee be suspended for the present."

Mr. BATT seconded the motion, which was carried.

Professor SIMONDS said he did not make any particular objection to the increase from nine to twelve students to be examined, as recommended by the Committee. He thought if twenty minutes were given, and ten students examined at a sitting instead of twelve, it would work very much better. He admitted that it was an idea of his own, in order to save money, to raise the number from nine to twelve, and to make the time fifteen minutes; but some observation fell from the President which induced him to think the matter over, and it appeared to him that what he proposed,—namely, ten students and twenty minutes,—would be far the better system. He asked that the matter be allowed to stand over.

The PRESIDENT said that it could not be allowed to stand over, as this was the kernel of the scheme.

Professor SIMONDS said it all hinged on the first examination. Professor Bentley did not see his way to examine twelve students at a quarter of an hour each on one night in botany.

The PRESIDENT said under the new scheme fifteen instead of seven and a half minutes at a joint table would be given to the examination in botany. Professor Bentley had, it was true, said that under the old course of instruction the students knew so little of the subject in which he examined, that he could get out of them all they knew in seven and a half minutes; but under the new three years' scheme of education the students would be more fully instructed, and fifteen minutes would not be too long for the examination. Under the present scheme, a year was to be given for the consideration of certain subjects--viz., botany, chemistry, and materia medica,—and no doubt the examiners would expect the students to learn a great deal during that time, and that they would be able to answer as many questions as an examiner could give in a quarter of an hour. He begged to move that the report be adopted, with the exception of the clause relating to no more than two examinations in the year, which would be held in suspense for the present.

Professor SIMONDS gave notice that on a future occasion he would call attention to the number of students that are examined, and the time devoted to each student at that examination.

Mr. GREAVES moved that the reduction for wages be £10 instead of £20.

Professor SIMONDS seconded the motion, which was carried.

Mr. P. TAYLOR seconded the motion for the adoption of the report, which was carried.

Election of Committees.

The following are the members elected to serve on the various committees during the ensuing year:—

Finance Committee.—Messrs. Broad, Balls, Harpley, Moon, Taylor, and Withers.

Publication Committee.—Professor Brown, and Messrs. Cox and Fleming.

House Committee.—Messrs. Balls, Batt, Broad, Harpley, and Withers.

College Fund.—Professor Brown, Messrs. Balls, Broad, Gowing, Harpley, Withers, and Woodger.

Parliamentary Committee.—Professors Simonds and Brown, Messrs. Broad, Cox, Fleming, Gowing, and Harpley.

Library Committee.—Messrs. Blakeway, Dray, and Harpley.

Mr. P. TAYLOR gave notice of an alteration in the Bye-laws, to the effect that there be no examination of a veterinary surgeon for the degree of Fellowship by a Preceptor.

The SECRETARY stated that he had received a letter from Mr. T. Briggs, Prestwich, Manchester, who is a candidate for Fellowship examination, enclosing for approval a copy of Certificate of General Education from the Faculty Hall of Physicians and Surgeons in Glasgow. A reply had been sent to the letter.

On the suggestion of Professor SIMONDS,

Mr. BATT proposed that a Committee be appointed to examine all such certificates for Fellowship, and to report thereon to the Council.

Mr. DRAY seconded the motion, which was carried.

The members of Committee appointed were Professor Simonds, Messrs. Batt, Cuthbert, Greaves, and Reynolds.

Regulations for the Fellowship Examination.

The following form of certificate to be produced by a candidate for the degree of Fellowship was suggested by the President :—

"We do hereby certify that Mr. *A. B.*, of *C.*, a member of the Royal

College of Veterinary Surgeons, has been engaged in the practice of his profession for five years and upwards, and is, from his general character and professional attainments, a fit and proper person to be admitted to the Fellowship of the Royal College of Veterinary Surgeons."

To be signed by three Fellows of the Royal College of Veterinary Surgeons.

The above form was agreed to, and ordered to be inserted in the Register.

The Council then adjourned.

QUARTERLY MEETING OF COUNCIL, HELD JULY 9TH, 1877.

Present—Col. Sir F. Fitzwygram, Bart., President, in the chair; Professor Williams; Messrs. Balls, Batt, Blakeway, Collins, Dray, Gowing, Greaves, Harpley, Moon, Taylor, Withers, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

Correspondence.

The SECRETARY intimated that the following letters had been received:

Letters from Professor Walley, Messrs. Cox, Cartwright, Smith, Reynolds, and Cuthbert, regretting their inability to attend the meeting.

A letter was read from Dr. Dunsmure, dated June 27th, in reference to the number of candidates coming up for examination under the old and new systems, making a total of 66 candidates, stating that the examinations would commence on July 18th, and requesting to be furnished with the requisite examination papers.

A letter from Dr. Dunsmure, acknowledging the honour of his election as a member of the Scottish section of the Court of Examiners and Secretary.

Presentations to the Library.

The SECRETARY intimated that he had received from the Secretary of the Royal Veterinary College a copy of their Supplemental Charter.

Also, that Mr. Fleming had presented Part IX. of his "Text-book of Veterinary Obstetrics."

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, a vote of thanks was awarded for the presentation.

Report of Examiners.

The SECRETARY reported that at the meeting of the Court of Examiners for the "Pass Examination," held July 2nd, eight passed and one was rejected, and on the 3rd July ten passed and two were rejected; making a total of eighteen passed and three rejected.

On the 4th July, under the old system five passed their "first examination" and one was rejected; and under the new system four passed and one was rejected. On the 5th eleven passed and one was rejected. On the 6th eight passed and four were rejected. Total, twenty-eight passed, and seven rejected.

The obituary notice was read.

The SECRETARY submitted a copy of the new Register.

The PRESIDENT moved, "That a copy be sent to each of the schools, to the Royal Agricultural Society, to the Principal Veterinary Surgeon of the Army, the Pharmaceutical Society, the Royal College of Surgeons, the Highland and Agricultural Society, the Irish Royal Agricultural Society, the Irish Inspector; and that the President have authority to send a few copies to such of the public bodies as he may think fit."

Mr. BATT seconded the motion, which was carried.

Degree of Fellow.

At a special meeting of the Court of Examiners for the examination of candidates for the degree of Fellow, in accordance with the Supplemental Charter, on July 7th, the following candidates underwent the necessary written and oral examinations, and were admitted Fellows of the Royal College of Veterinary Surgeons :—

Mr. Richd. Poyser, 6th Dragoon Guards, Colchester.
„ Wm. Hunting, Down Street, London.
„ Tedbar Hopkin, Strangeways, Manchester.
„ Wm. Augustus Taylor, Turner Street, Manchester.
„ Thomas Briggs, Prestwich and Bury, Manchester.

Finance.

The report of the Finance Committee was then read. It stated that the present liabilities amounted to £136 14*s.* 1*d.*, which the Committee recommended should be discharged. From the Treasurer's statement, it appeared that the balance at the bankers' amounted to £547 6*s.* 1*d.*

Mr. DRAY asked what was the annual average amount of fees received by each examiner.

The answer to this question was deferred till next meeting.

Mr. DRAY then asked the annual average travelling expenses of the examiners who went from London to Scotland, and from Scotland to London.

In reply, it was stated that the expenses were about £24 annually.

Mr. DRAY further inquired whether the expenses of collecting, etc., the New College Fund had been paid out of the funds of the Royal College, or out of the Building Fund.

The SECRETARY replied that the expenses had been paid by the Royal College of Veterinary Surgeons, with the exception of £15 for advertisements.

MR. DRAY thought that, considering the present state of the funds, the Building Fund ought to have borne all its own expenses.

The PRESIDENT agreed with Mr. Dray as a matter of principle, but as a matter of fact the amount paid had been very small.

Mr. DRAY then called attention to the resolution passed at the last meeting to reduce the salary of the Secretary by £10. Considering the present high price of provisions, and the long service the Secretary had rendered to the College, he thought that instead of the salary being diminished it ought to be increased. He therefore gave notice that at next meeting he would move—"That the reduction of £10 in the Secretary's salary be rescinded."

Mr. GOWING, referring to the Building Fund, asked if it would not be advisable to go outside the profession for subscriptions, and suggested that the Government should be applied to for assistance in the matter. He also brought forward a number of proposals which he deemed calculated to raise he status of, and increase the confidence of the public in, the veterinary profession.

The PRESIDENT pointed out that about a year ago advertisements had been inserted in the newspapers, calling attention to the proposed new College, and inviting subscriptions, but the result had been financially unsuccessful. He thought, however, that the Building Fund Committee might be urged to make further endeavours, and that they might apply to the Privy Council for a grant in aid of this Fund.

In reply to Mr. P. Taylor, the PRESIDENT said that the object of the Fund was simply to build a house in which the College might hold its meetings, and which might be the recognised habitation of the profession. The estimated cost of building such a house would be about £4000, and the

expense of the site would be about £2000. Towards that £1500 had already been subscribed, and if £1500 more could be raised, £3000 could be borrowed on the security of the building and site.

Mr. TAYLOR then expressed his willingness to subscribe twenty-five guineas, in the name of Peter Taylor and Son, towards the fund.

On the motion of Mr. DRAY, the report of the Finance Committee was received and adopted.

Cheques were ordered to be drawn for the current expenses.

On the motion of the PRESIDENT, the Secretary was authorised to destroy the records of examinations up to within five years.

The PRESIDENT moved, "That the time for the Easter examinations in Scotland be fixed for the week following the London examinations."

Mr. DRAY seconded the motion, which was carried.

Mr. BLAKEWAY asked if the President had yet ascertained the probable cost of an Act of Parliament for the better protection of the profession. He thought it was very opportune that some steps should be taken for the better protection of veterinary surgeons. The curriculum of study had been of late much enlarged, and the cost of obtaining a diploma had been very much increased, without sufficient protection being given to members of the profession after the diploma had been obtained. He begged to give notice that at the next quarterly meeting he would bring forward the following motion:—"That it is very desirable to obtain an Act to prevent, after this date, any person from using the title of Veterinary Surgeon who is not a member of the Royal College of Veterinary Surgeons.

The PRESIDENT said, from inquiries he had made, he found that the cost of the unopposed Act of Parliament would be about £300, but if opposed, it was impossible to say what it would cost.

After some conversation as to the advisability or otherwise of obtaining such an Act, the Council adjourned.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE ordinary general meeting was held on Thursday, June 7th, at 10, Red Lion Square, at 7 p.m., J. W. Axe, Esq., Vice-president, occupying the chair.

Mr. HOWARD, referring to his observations made at the last meeting on a case of Rabies where Cardiac Hæmatomata existed, produced the preserved specimens—namely, two clots, the largest being from the right ventricle; the specimens were fibrous, producing a certain amount of fatty matter and broken-down corpuscles. He also observed that the subject had been described by D. Hope and M. Bouilland. In regard to the pathology of this disease, he stated that the endocardium was analogous to the lining of the bloodvessels, being pale-white and translucent. In endocardiac inflammation, there was an exudation of lymph on the free surface which might be washed away by a current of blood, together with fibrinous vegetation on the valves. There were different opinions as to these formations—one being, inflammation of the valves causing vegetations; another, lymph exudation from the heart itself; and another, an elimination of fibrin direct from the blood during a state known as fibrinous blood crasis. In the case of taking up an artery, the thread becomes quickly covered with fibrin; and may we not assume a possibility of fibrinous effusion in passing through the heart, the thread-like *chordæ tendinæ* being the medium, as a fixed point? If the clot be formed during life it is said to adhere to the endocardium, but if found during the agonies of death, or after it, it requires no force to detach it. In the present instance some force was required, and he inferred they had existed for some time during the animal's life. Medical men, for the most part, are agreed

that coagula occur in scrofulous subjects : now, in the dog Scrofula exists to a great extent, and although we cannot make it part of the etiology of Rabies, yet doubtless it bears a great analogy to it, and may be the cause of setting the process on foot.

The CHAIRMAN, noting Mr. Howard's remarks upon the needle-and-thread suture, said its presence accounted for the deposit as causing an inflammatory action which commenced in the vessel where the thread entered. Experiment proved that blood may be completely arrested in a vessel by setting a needle on either side and fixing them with thread, without piercing or injury at all ; also by setting four needles at two different parts; and the blood will not coagulate so long as the vessel is uninjured. He thought the case hardly parallel, as to the *chordæ tendinæ* of the heart. With reference to Scrofula as a disease affecting the dog, he had been at some pains to determine the relative frequency of Scrofula, and the predisposition to it in different animals, and he thought he might say that of all our domesticated animals the dog is the *least* susceptible, having by experiment failed to produce it, but succeeded with the cat, with which it is readily induced by ingestion, or feeding with scrofulous flesh : that it does occur in the dog is certain, and he has several specimens, notably a second one affecting the brain. He then proceeded to draw attention to a case recently under his observation at the College infirmary, interesting not as a unique affection, but as showing how a disease existent in one organ may provoke dangerous and even fatal disease in other parts,—suggesting the advisability of looking beyond the organ affected, and to which the more prominent symptoms point ; we should observe, by the parts presented to our notice and the microscopic sections shown of the several parts, that there were structural alterations of such a kind as to give rise to dangerous symptoms. The animal was an aged bay cart-mare, admitted April 6th, supposed by the owners to be the subject of Influenza. An important feature in this case, and one bearing on jurisprudence and the writing of certificates, was that she had been at *hard* work up to the time of admission ; this needed particular attention, because, when he should describe the structural changes found, it would seem incredible that an animal could perform ordinary duties in such a state. The temperature registered $102\frac{3}{5}$, the visible mucous membranes were injected, pulse quick and intermittent, fæces natural, and a disinclination to feed ; the breathing largely abdominal, resembling that apparent in Emphysema ; percussion and auscultation gave normal sounds. From the 6th to the 21st improvement continued, when she suddenly became worse, diffused swellings appearing beneath the abdomen and breast ; the visible mucous membranes appearing pallid, the larger ones much engorged and mapped out in spaces, —evidently the capillary system not being overcharged. The breathing grew accelerated, the pulse being feeble and strong in turns ; regurgitation and distinct sounds at the chest, the sound appearing to indicate an inability to empty itself, and having a blowing character. [These notes were furnished by the hospital surgeon to him.] The swelling greatly increased, and death ensued on the 25th. He regretted the notes were not more extensive, as they were important in connection with the results revealed after death. The body was fairly nourished, and considering the time the animal had been in the infirmary, she must have been in fair condition when admitted, seventeen days before ; the subcutaneous tissue was infiltrated with serum, but the vessels not particularly engorged ; the abdomen contained several quarts of straw-coloured fluid ; the peritoneum opaque throughout, and on it several flocculent papillary processes, such as are seen in Chronic Peritonitis, or organized lymph. The intestinal glands were largely distended with blood, the intestines being nearly empty ; the mucous coats œdematous in parts—

more especially in that part covering the cæcum, and petechial spots to a more or less extent. The mucous layer of the stomach was slightly thickened by serous infiltration, and presenting minute blood-spots. The liver was much enlarged, weighing 50 lbs., so that some idea of its size may be conceived ; the superficial hepatic lymphatics were much engorged and enlarged—so much so as to be evident in their ramifications over the surface of the liver beneath the peritoneum as very considerable vessels, the larger ones about the size of a quill. Glisson's capsules were thickened and opaque in parts; the colouring of the liver variegated, with red spots circumscribed with yellow lines, like a section of nutmeg, the organ itself firm in consistence, without any extensive fatty change ; it was nodulated towards the borders, due to constriction occasioned by the contraction of new fibrous tissue that had developed in it, the biliary ducts being charged with inspissated bile. The hepatic plexus of the vessels very much engorged, shown in the centre of the lobules. The kidneys much enlarged, and œdematous ; weighed 7½ lbs. ; sections showed the granular condition common to the affection ; the urinary tubes were charged with fatty matter. The heart weighed 18 lbs., the pericardium containing a quantity of fluid. Beneath the left side of the endocardium were several blood-blotches, the cavities distended with soft coagula, as also their larger vessels ; both auricles were hypertrophied and dilated ; the auriculo-ventricular valves and their cords much thickened, the valves' borders having extensive vegetations, the papillary muscles being much elongated, the cords broken away in two parts, and the endocardium more or less roughened with fibrinous accretions. The valves of the left ventricle were similarly affected, the aorta being thinner than natural, while the pulmonary artery was slightly thickened. The lungs were much enlarged and œdematous, with Chronic Emphysema : they weighed 34½ lbs. ; the spleen weighed 7½ lbs., and was also enlarged, and in parts had suffered from ruptured vessels, otherwise was normal. Now, with reference to these changes, he would attempt to account for their origin. We knew that Chronic Emphysema existed here, under which conditions the right ventricle becomes hypertrophied and dilated ; in this instance the right auricle was also involved, and to such an extent as to render the valves incapable of performing their functions. That defect had permitted the blood, or some part of it, during the contraction of the heart, to pass back into the right auricle, inducing regurgitation. Following, therefore, the course of the veins opening into the right auricle, the anterior and posterior vena cava, we know it is an invariable accompaniment of obstructive disease to the right side of the heart to have congestion of the liver, which existed in this instance. In the dilatation of the valves there had been placed an excessive strain—a state common to the production of valvular disease, and which had caused Endocarditis. It was difficult to explain the cause of the left side being affected, the only inference being that the same obstructive disease operated in producing diseased liver and kidneys, interfering with the circulation through the aortic ramifications : that is to say, an impediment was placed in the way of the general circulation by the venous repression, and the left side was called upon to make a greater effort. Some idea of the degree of dilation could be formed, when he informed them that the circumference at the base measured 3 ft. 2 in. ; from its apex to the superior part of the right auricle, 16 in. ; from the same part to the superior part of the left it was 13½ in. ; the coagulum from the right weighed 8 lbs., that from the left 6 lbs. ; so that the heart and clots weighed 32 lbs., which, with the weight of the other organs, equalled 119¼ lbs. Judging from those stupendous figures, it was wonderful that the animal could have performed its duties. He would again revert to the care and judgment

necessary in writing certificates, which this very case brought so forcibly before his hearers; he did not think we should commit ourselves to the statement that a horse "is sound,"—but that he "appears so to us," or that "we detect no unsoundness in him." To say a horse is sound is in numerous instances to commit a blunder; he may appear so to-day, and you give an opinion to that effect, and to-morrow he may be brought in a cart, dead.

Professor AXE then showed some rough sketches made to exhibit the different states of the parts. One diagram showed the hepatic lobule in a state of health; another a dilated intralobular venule, and the hepatic cells largely pigmented round it; another showed those cells with their inner zone completely atrophied, reduced to nuclei and the *débris* of the secreting elements. On another, at the outer part of the atrophied cells, there was again a zone of pigmented cells at their circumference, with healthy cells. The kidneys had suffered from interstitial nephritis, and two diagrams showed a great difference—the tissue of one being charged with inflammatory corpuscles, the other being free from them.

Mr. HOWARD said we ought to be much obliged to the Chairman for the pains taken by him to introduce and illustrate such an interesting case; we needed an increase in our microscopic knowledge on the question of soundness: it was morally impossible to say a horse was sound, and it should not be required of us, or yet to stand an action at law; the human surgeon is not infallible, yet he is exempt from liability, inasmuch as in the army a recruit is passed by him as sound who perhaps in three or four months is taken into hospital with Consumption, and in a short time is discharged. Would Her Majesty's Government, or any sane person, sue the surgeon for that man's food and clothing? Why, therefore, should we, more than a surgeon, or a lawyer, be expected to do other than give an opinion? A lawyer does not guarantee that what he says is correct, for you may go to law afterwards and find the reverse will be established. In the case of horse examination everything is done to blind us, and our opinion is sought for an animal we have never seen before. He thought the absent Fellows had lost an intellectual treat, especially with respect to the microscopes, of which there were nine.

Some conversation ensued as to the extent of a veterinary surgeon's liability for an opinion, and the case of Mr. Day, of York, adduced in proof of the responsibility; and the fact of the North of England Defence Association being established for the very purpose of protecting its members in that respect.

A cordial vote of thanks was passed to the chairman for introducing the subject; and the ballot for Mr. William Furnivall, of Kingston-on-Thames, being taken, he was declared duly elected, and the meeting adjourned. Present, ten Fellows and three visitors.

JAMES ROWE, JUN., *Hon. Sec.*

THE LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE fifty-second quarterly meeting of this Association was held on Thursday, July 19th, at the Medical Institute, Hope Street, Mr. W. Woods, President, in the chair. There was the largest attendance of members and visitors ever seen at one of these meetings,—amongst whom the following may be enumerated:—Colonel Sir F. Fitzwygram, Bart., President of the Royal College of Veterinary Surgeons; Professors Walley and Williams; J. Stopford Taylor, M.D., Deputy Medical Officer of Health; Messrs. Geo. Fleming, F.G.S., M. J. Harpley, T. Hopkin (President of the Lancashire Association), A. B. Procter (President of the Midland Counties' Association), Peter Taylor (President of the Benevolent and Defence Association), T. Greaves, T.

Taylor, W. A. Taylor, J. B. Taylor, S. Locke, J. Lawson, A. Lawson, Paton, W. Dacre, S. L. Buckley, Geo. Darwell, Ogden, M. J. Roberts, F. Blakeway, H. J. Cartwright, J. W. Hill, H. J. Goodall, C. J. Reynolds, G. Pyatt, H. M. Stanley, Goulè, Jas. Freeman, J. Anderton, J. Gerrard, Beddard, G. Rossel, W. G. Schofield, M. E. Naylor, Roughsedge, G. Morgan, Jas. Storrar, T. Harwood, G. Cane, W. Elam, C. W. Elam, Barnes, Hutcheon, G. Heyes, E. Faulkner, Rothwall, W. Dobie, T. G. Procter, J. Welsby, Joseph Leather, W. Leather, T. Leather, W. J. T. Moore, W. W. Townson, Jones, W. A. Cartwright, etc. Numerous telegrams and letters of apology were also received from gentlemen unable to attend the meeting.

The minutes of the previous meeting having been read and confirmed, Mr. Roughsedge, St. Helens, was nominated for election.

Mr. G. FLEMING, F.G.S., of the Royal Engineers, introduced the question of the desirability of obtaining an Act of Parliament embodying a clause protective to the interests of the profession, and in doing so said there was no doubt the veterinary profession had been greatly injured by men who were not qualified by study or examination assuming the title of veterinary surgeon. Injury was also done to the public, and he thought that if by a legal process they could prevent unqualified persons assuming a designation to which they had no right, much good would be done. It was not the intention of that Association to prohibit unqualified persons from practising, but they were determined that they should practise under a different title to that of V.S.

Sir F. FITZWYGRAM, Bart., President of the Royal College of Veterinary Surgeons, said the real question was whether it was judicious to apply at the present time for an Act of the kind referred to. He saw one great obstacle in the way, and that was the examination and *quasi* diploma of the Highland and Agricultural Society. He thought they should endeavour to induce, by argument and not by pressure, the Highland and Agricultural Society to withdraw their examination; and he had little doubt that, if left to themselves, that Society would ultimately do so.

Mr. GREAVES, Manchester, also thought it would be unwise to go for an Act in the present state of feeling.

Mr P. TAYLOR, Manchester, said he was certain that if the Association applied for an Act it would be opposed by all the Scottish noblemen and members of Parliament.

Mr. G. MORGAN, Liverpool, said he thought it would be difficult to stop persons calling themselves veterinary surgeons. He was of opinion that there would be no uecessity for a penal clause if all students were examined by one body.

Mr. HARPLEY, V.S. to the Royal Horse Guards, fully endorsed the views expressed by Sir F. Fitzwygram with reference to obtaining an Act of Parliament to prevent non-qualified men from calling themselves veterinary surgeons; but he thought no active measures should be taken until we had ascertained if the Highland and Agricultural Society of Scotland were willing to do away with their system of granting degrees of proficiency in veterinary science to those students from the Edinburgh schools who presented themselves before the Examining Board.

Mr. FLEMING replied, and moved that the members of the profession who have studied in the Scotch schools be requested to petition the Highland and Agricultural Society to discontinue granting its certificates.

The motion, seconded by Mr. G. MORGAN, was carried, and a committee was appointed to carry out the objects of the resolution.

Professor WILLIAMS, of the New College, Edinburgh, read a paper on "The Teaching and Examination of Students," and a discussion followed, in which Mr. Fleming, Professor Walley (Edinburgh), and Sir F. Fitzwygram took part.

Meat Inspection.

Professor WALLEY, of the Clyde Street College, Edinburgh, also read a paper on "The Inspection of Meat: its Sanitary and Veterinary Aspects," in the course of which he referred to what meat was marketable and what unmarketable; what was harmless, and what injurious; whether the rules followed in the inspection of meat were sufficient for the purpose; and whether the inspection of meat was generally in proper hands. He pointed out the great differences in the judgment of inspectors as to what meat should be passed for consumption, and urged that the Government should lay down some authoritative rule as to what flesh should be passed and what condemned. He unhesitatingly asserted that the inspection of meat at the present time was not in proper hands. The usual plan adopted was to appoint a butcher as inspector, with a medical man as sanitary officer. The old adage "Set a thief to catch a thief" might be present to the mind of those who appoint the first class of men; and he (the Professor) need not point out the utter ignorance of such men outside the mere routine knowledge of their business; and this knowledge had been gained by ancestral descent in some instances, and by intuition in others; while such men must necessarily to some extent be biassed in favour of their fellows. As to the appointment of medical men to assist the ordinary inspectors, he presumed this was based on the assumption that, as medical men studied the ills of the body, they were the best judges of such matters; but he need not go far to disprove such assumption, and in some cases he was afraid presumption. They had only to look at the records of the police courts, and peruse the evidence given in trials of persons for exposing diseased meat, to find numerous instances of lamentable and gross ignorance on the part of medical men of the maladies to which animals are subject. The veterinary surgeon, as trained at the present day, was the proper authority in such matters, having a thorough knowledge of the habits of animals and the diseases to which they were liable.

Mr. J. W. Hill (Wolverhampton), Mr. Fleming, and others took part in a subsequent discussion,—the latter stating that until meat inspection was entrusted to veterinary surgeons, the public would always incur great risk as to the consumption of meat.

Mr. BLAKEWAY, Stourbridge, said that, as many over-fed cattle showed tubercular symptoms, if meat which was at all tuberculous was to be condemned, they would have to entirely alter their system of feeding.

The meeting closed with a vote of thanks to the readers of papers and the chairman.

Association Dinner.

The members of the Association, with about eighty friends from nearly every part of the Kingdom, banqueted at the Adelphi Hotel in the evening. Mr. W. WOODS, President, occupied the chair; and amongst those present were Colonel Sir Frederick Fitzwygram, Bart., Professors Brown, Simonds, Walley, Williams; Dr. J. S. Taylor (Deputy Medical Officer of Health); Mr. Hunt (veterinary referee to the Royal Agricultural Society), Messrs. Fleming, Harpley, R. S. Reynolds (secretary), J. Leather (Vice-president), G. Morgan (Vice-president), G. Hayes, J. Welsby, T. Procter, W. Leather, C. W. Elam, T. Leather, P. Taylor, Proctor (Coventry), Hopkin (Manchester), etc.

The usual loyal and patriotic toasts were proposed; Mr. HARPLEY responding for the "Army, Navy, and Auxiliary Forces."

Professor BROWN (London), in proposing the "Royal College of Veterinary Surgeons," said that for the last few years the profession had made strides which might not unfitly be termed gigantic. They did not possess a history

like that of the sister medical profession, but their Veterinary Institute had lately made progress and changes which were intended for the benefit of the profession.

Sir F. FITZWYGRAM, President of the Royal College, in acknowledging the toast, referred to the changes which had been made in connection with the training of their students, and said that under the present system the College hoped to send into the profession men who would be worthy of the name of veterinary surgeons, and be acceptable to their employers. The chief of the changes was the increase of the period from one and a half to nearly three years for students, an increase in the number of examinations and the number of subjects on which students were examined. He looked forward to the future of the profession hopefully. Everything was in their favour, as the value of horses and cattle was increasing, and the knowledge of sanitary science was also improving throughout the length and breadth of the land.

Mr. FLEMING, F.G.S., gave, in laudatory terms, "The Liverpool Veterinary Medical Association, and the President," which was acknowledged by Mr. WOODS. He said their Society had now attained a position of prosperity which they must all desire; and he enjoined all veterinary surgeons to join the Society, as it would enable them to get rid of old prejudices and find out better modes of treatment.

Sir. F. FITZWYGRAM proposed "The National Benevolent and Mutual Defence Association," acknowledged by Mr. P. Taylor; Mr. Blakeway gave "The Veterinary Schools," responded to by Professors Simonds, Walley, and Williams; and Mr. T. Taylor gave "The Other Veterinary Medical Associations," coupled with the names of Messrs. A. B. Procter and Hopkin.

RICHARD S. REYNOLDS, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly meeting held on July 4th, the Hon. W. Egerton, M.P., stated that Professor Brown had presented the following report to the Committee:—

"The country is not yet officially declared free of Cattle Plague, but I am in a position to state that the disease has ceased. The prominent facts in the history of the outbreak are already before the Committee, but it may be interesting to make a statement of the localities in which the disease has occurred, and the number of animals which have been sacrificed in consequence.

"In England altogether forty-six outbreaks occurred among 1089 cattle, of which 835 were slaughtered healthy, one escaped; 253 were attacked with the disease, of which 219 were killed and thirty-four died.

"In the several counties the outbreaks were as follow:—

"In Essex six outbreaks occurred among twenty-three cattle, of which fifteen were slaughtered healthy; eight were attacked with the disease, of which seven were killed and one died.

"In Lincolnshire one outbreak occurred among twenty-four cattle, of which eighteen were slaughtered healthy; six were attacked and killed.

"In Middlesex (ex-Metropolis) there were five outbreaks among 425 cattle, of which 322 were slaughtered healthy; 103 were attacked, of which eighty-six were killed and seventeen died.

"In York (East Riding) there were seven outbreaks among sixty-five cattle, of which forty-six were slaughtered healthy; nineteen were attacked, of which seventeen were killed and two died.

"In the Metropolis there were twenty-seven outbreaks among 552 animals,

of which 434 were slaughtered healthy, one escaped; 117 were attacked, of which 103 were killed and fourteen died.

"Since the Privy Council took charge of the Metropolitan police district, in accordance with the suggestions which were made by the Royal Agricultural Society, the following outbreaks occurred :—

"The order under which the action of the local authorities in regard to Cattle Plague was taken by the Privy Council came into force on April 16th. On April 17th an outbreak occurred at Willesden among three cattle, all of which were attacked, and were immediately slaughtered and buried. On April 19th another outbreak occurred at Harlesden Green among sixty-six cattle, of which seven were attacked (of which one died, six were killed diseased), and fifty-eight were slaughtered healthy. On April 22nd an outbreak occurred in the Metropolis, in Ledbury Road, Bayswater, among thirteen animals, which were all immediately slaughtered. On April 23rd an outbreak occurred at Kensal Green among seventy-five animals, of which two were attacked (one of which died, and one was killed diseased), and the remaining seventy-three were slaughtered healthy. On the 24th of April an outbreak occurred in Kilburn Lane, Willesden, among 124 animals, of which one was attacked and was killed, and the remaining 123 were slaughtered healthy. On April 25th another outbreak occurred in Ledbury Road among thirty-eight cattle, of which three were attacked and slaughtered; the remaining thirty-five healthy animals were also slaughtered. On May 1st an outbreak occurred in the Stoke Newington district among forty-one cattle, of which ten were attacked and were immediately killed, and the remaining thirty-one were slaughtered healthy. On May 15th an outbreak occurred in Whitechapel among five animals, all of which were attacked, and were immediately slaughtered.

"It may be remarked that, shortly after the Privy Council took charge of the Metropolitan police district, there was reason to entertain some apprehension that the disease was spreading, and energetic measures were necessary for the purpose of suppressing it. The means which were adopted were, fortunately, successful.

"At the present time all the regulations which were made by various local authorities under the Cattle Plague Order of 1877 have ceased to operate, and the movement of stock in this country is free, with the single exception of the Metropolis. The Metropolitan Cattle Plague Order of 1877, under the provisions of which cattle, sheep, and goats are confined within the Metropolitan boundaries, still remains in force. The necessity for this will be apparent when it is stated that in all the premises where Cattle Plague has existed fresh stock have been or are now being introduced, and it will consequently be necessary to keep these animals under supervision for some time, in order to avoid the danger which would be incurred should an outbreak occur on previously affected premises, and any infected animals be sent to the Metropolitan Market and thence removed to various parts of the country. It is hoped that in a short time this only remaining restriction on the free movement of cattle in the country may be removed."

This report was adopted.

NEW MEMBERS OF THE PROFESSION.

AT the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held July 2nd and 3rd, the following students from the Royal Veterinary College were admitted members of the profession :—

Mr. George Frederick Flavell, London.
„ Harold Leeney, Brighton.
„ James Edward Ainsworth, Bury, Manchester.
„ John Atkinson, Burton, Westmoreland.
„ Fred Spencer, Grandthorpe, Grimsby.
„ Thomas Edward John Lloyd, Liverpool.
„ Peter Alfred Lawler, Palmerston, Dublin.
„ Arthur Hodsoll Brooks, London.
„ Thomas Avis, Royal Veterinary College, London.
„ William Ridgman, Liskeard, Cornwall.
„ Richard Head Ringe, Borstal, Rochester.
„ William Edmund Brown, Ormskirk, Lancashire.
„ Alfred Joseph Sewell, London.
„ John Henry Miller, Southsea, Hants.
„ Sidney Hill, Chagford, Devonshire.
„ Edward Montague Davy, Exeter.
„ Arthur Wilberforce Mason, Cirencester.
„ Joseph Mason, Bolton, Lancashire.

The following gentlemen passed their examination with VERY GREAT CREDIT :—Messrs. Harold Leeney and Alfred Joseph Sewell.

The following students of the Royal Veterinary College passed their "First Examination" at the meetings of the Court of Examiners on July 4th, 5th and 6th :—

July 4th.

Mr. George Fowler.
„ James Richard Carter.
„ William Alfred South.
„ Henry Theakston.
Mr. Thomas Pritchard.
„ James Mills.
„ Frederick Leigh Slater.
„ Kirtlan Smith.
Mr. James Ingham.

July 5th.

Mr. John Soulsby.
„ William Hastings Farrow.
„ Thomas John Keech.
„ Edward Simpson Shave.
„ John Davies Thomas.
Mr. William Roach.
„ Ernest Edwin Batt.
„ Joseph Bainbridge.
„ William Frank Smith.
„ James Blakeway.
Mr. William John Payton Tibbatts.

July 6th.

Mr. Titus Littler.
„ Henry Shaw.
„ William Henry McCaldon.
„ William Robert Emery.
Mr. Herbert Hall.
„ William Alston Edgar.
„ Charles Edward Golledge.
„ Arthur Cox.

Jurisprudence.

EXPOSING SHORN SHEEP IN COLD WEATHER.

AT Wolverhampton, on July 4th, William Evans, cattle dealer and butcher, Princes End, Tipton, was charged with cruelty to animals by exposing a number of shorn sheep during the cold weather in April last. Mr. Barrow prosecuted on behalf of the Society for the Prevention of Cruelty to Animals, and Mr. Alfred Greenway defended. The defendant had been previously

summoned, but owing to a mistake in the summons it was dismissed, and the present summons had to be issued.

Mr. Barrow briefly stated the case for the prosecution. He said that on Monday, the 16th of April last, thirty shorn sheep were despatched by the defendant's man from Cirencester to Wolverhampton. Mr. Peters, the local inspector of the Society for the Prevention of Cruelty to Animals, saw the sheep suffering from the cold. The reason that sheep were shorn by some farmers at that time of the year was that the wool is then more valuable than at any other time of the year. The farmers, who pocketed the proceeds of the shearing, were the parties mostly to blame, but the prosecution could not reach them.

William Peters, the inspector of the Cirencester Branch of the Society for the Prevention of Cruelty to Animals, was then called, and stated that on the 16th of April he saw thirty shorn sheep put into a truck at the Great Western Railway Company's station at that place. The truck was numbered 26,115. It had open sides with a covered top. The consignment ticket on the truck was "Evans to Evans, Wolverhampton." He saw the sheep leave the station at about five minutes to three o'clock. In consequence of the condition of the sheep he made a communication to the secretary of the Society, and that gentleman sent him with a telegram to the telegraph office for Captain Segrave to watch the arrival of the sheep at Wolverhampton. —Cross-examined: It was a very large market that day. Most of the sheep were shorn. There were only a few sheep in the wool. It was a bitter cold day. Many people sheared their sheep before April.

Mr. Spooner.—"But this Act of Parliament is to stop that."

Witness, in reply to Mr. Spooner, said the sheep's backs were arched, and "they shivered like a dog in a wet sack."

Mr. Spooner.—"I never heard that before."

Police-constable Moule stated that he saw the sheep in question arrive at Wolverhampton at nine o'clock on Tuesday morning. He saw them unloaded by Samuel Spruce, a servant of the defendant, and a Great Western Railway servant, and afterwards taken to the cattle market. He followed them there. Some of them looked well, and others walked lame. They were running at the nose. He subsequently saw them in the covered market at the cattle market, and called in Mr. J. W. Hill, veterinary surgeon. It was usual to convey the sheep by night to get them to market the next day.

Henry Francis, the local inspector of the Society for the Prevention of Cruelty to Animals, next stated that he met the defendant on the Thursday after the sheep in question arrived in this town. He asked him (witness) "What about the clipped sheep? My father knows nothing whatever about them. I bought them and trucked them."

Mr. J. W. Hill, M.R.C.V.S. (of the firm of Messrs. Cartwright and Hill), said that on April 17th he accompanied Police-constable Moule to the cattle market, where, at the request of Captain Segrave, and on behalf of the Cirencester Branch of the Society for the Prevention of Cruelty to Animals, he examined the thirty sheep in question. He found them all suffering more or less from the effects of cold, and the whole of them were shivering. The majority of them were running at the nose, and one was suffering from congestion of the lungs. There could be no doubt that stripping sheep of their natural clothing at an unnatural season of the year, for the sake of a trifling extra profit, was in itself—unless they were immediately slaughtered, or properly provided with warmth, which was rarely the case—an act of cruelty. The evil did not end with the offence. An amount of paralysis of the nerve extremities, due to the effect of intense cold on a suddenly exposed surface of the naked body, ensued. The bloodvessels became congested, and, as a

consequence, inflammatory fever was developed, and serious diseases of the vital organs were almost sure to follow such a condition if long maintained ; besides, it was very easy to conceive that inflammatory action thus established, and especially so diffused as in the present cases, must exert a corresponding influence on the tissues of the subject, and render the flesh, in a sanitary point of view, not desirable for human food. The lameness on their removal from the truck was the result of cramp from excessive cold. They were none of them lame when he subsequently examined them in the cattle market. —Cross-examined : A great many of the sheep in question were certainly unfit for human food, especially the one suffering from congested lungs.

Professor W. Pritchard, of the Royal Veterinary College, London, was next called. He stated that the shearing of sheep in inclement weather caused a stringency of their vessels, and considerable pain, ultimately ending in running at the nose. Great pain was caused to the sheep, the surface of the skin being the most sensitive portion.

Mr. Spooner.—"The same as the human body, without clothing?"

Witness.—"Yes, sir."—Cross-examined : Thirty shorn sheep, so described, would not keep each other warm. Cold weather was undoubtedly a very improper time to shear sheep. May was the proper time to shear them.

This was the case for the prosecution.

Mr. Greenway, for the defence, here objected to the jurisdiction of the Court, and submitted that the proceedings should have been instituted in Cirencester.

Mr. Spooner over-ruled the objection, as the exposure took place in this borough.

Mr. Greenway went on to remark that the defendant went to Cirencester cattle market in the ordinary course of his business on April 16th, and seeing a large number of shorn sheep exposed for sale under the eyes of Inspector Peters, he bought the thirty in question. They were sent to the railway station and despatched to Wolverhampton without delay, everything being done for them that could be done to prevent their catching cold.

John Mullinor, a servant of the Great Western Railway Company, who received the sheep on their arrival, said he did not notice that there was anything the matter with them.

Mr. Greenway asked that under the circumstances the defendant might be dealt with leniently.

Mr. Spooner said he had no doubt about the cruelty, and the defendant was fined £2 and costs. According to the rules of the Court he could not allow the costs of the professional witnesses.

Parliamentary Intelligence.

HOUSE OF COMMONS, JULY 2.

The Army Veterinary Department.

IN answer to Captain Home, Mr. HARDY stated that no candidates had offered themselves for the fifteen vacancies now existing in the Army Veterinary Department. Many schemes had been submitted to the War Department for the purpose of making the Army Veterinary Department more popular with the veterinary profession, and were now under consideration ; but until the probable cost and the results of such schemes had been inquired into, he did not think it right to make any statement as to what measures he might propose to take in reference to the matter.

JULY 16TH.

The Cattle Plague in the Metropolis.

Viscount SANDON, in reply to Colonel Kingscote, said he was sorry to say that there had been a fresh outbreak of Cattle Plague in Bethnal Green, in a shed containing ten cows. Several were affected, and the whole were slaughtered before five p.m. yesterday, after having been condemned by the Privy Council inspector. The owner did not make any report of the sickness amongst his cows, as required by the orders of the Privy Council, and the origin of the outbreak had not been traced as yet. Fortunately the orders of the Privy Council, under which no animal was allowed to leave the Metropolis alive, and also for dealing with the Cattle Plague in the Metropolis, were still in force. That afternoon the Privy Council had passed an order restricting the removal of live cattle in the Metropolis north of the Thames. Every precaution would be taken for checking the outbreak.

Sir M. H. BEACH, in answer to Mr. Pemberton, said that the Irish Privy Council had thought it desirable, whilst any risk remained, not to relax the restrictions on the importation of live cattle into Ireland, but he had no doubt they would shortly be able to do so, especially with regard to sheep and pigs.

Army Veterinary Department.

Gazette, July 3.

14TH HUSSARS.—Veterinary-Surg. of the First Class W. A. Russell, from the Army Service Corps, to be Veterinary-Surg., vice Veterinary Surg. of the First Class F. F. Marshall, who exchanges.

Gazette, July 10.

1ST DRAGOON GUARDS.—Veterinary-Surg. Seaward Longhurst, from the Royal Artillery, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class L. Byrne, retired on half-pay.

Obituary.

THE Registrar of the Royal College reports the following deaths of members of the profession :—

	GRADUATED
Mr. Philip Wyatt, Sandover, Ermington, Devon . .	Dec. 21, 1859.
„ John Yates, St. Helens, Lancashire . . .	May 11, 1849.
„ Wm. Jas. Bland, Boston, Lincolnshire . . .	May 10, 1854.
„ Wm. Johnson Briggs, Kidderminster . . .	April 18, 1871.

We have also received intelligence of the demise of Mr. Smith, of Ormskirk, Lancashire, whose death is much regretted by a large circle of friends.

With much sorrow we have likewise to announce the decease, on July 12th, of Mr. Thornton Hart, Veterinary Surgeon to the 2nd Life Guards. Mr. Hart graduated in 1851, joined the army in July, 1855; was transferred to the Life Guards in June, 1863, and promoted to the grade of First Class in December of that year. Mr. Hart was greatly esteemed in his regiment, and his untimely death at the age of forty-seven years is much deplored.

The National Veterinary School at Brussels has sustained a serious loss by the death of Mr. J. B. A. Derache, one of its most distinguished teachers, and

who was also a professor at the Brussels University. Though only forty-two years of age, Professor Derache occupied a high position in Belgian scientific circles, and he was an able and accomplished veterinarian. His contributions to the *Annales de Médecine Vetérinaire* are very numerous and valuable, and he was a corresponding member of the Royal Academy of Medicine, and a member of many learned societies.

Notes and News.

TÆNIA IN BLACKBIRDS.—A correspondent to the *Lancet* writes: "A very young blackbird (this year's) died, and a subsequent examination revealed the presence of tæniæ in the intestinal canal. They were of considerable length, and their rings beautifully developed. On submitting them to Professor Cobbold, he pronounced them to be *Tænia angulata* (Rudolphi). They have never been described in this country, and have, I understand, only been observed in the thrush family. Another death has occurred in the same brood from the same cause."

HOG CHOLERA IN THE UNITED STATES.—Mr. J. R. Dodge, the Statistician of the Department of Agriculture, reports, as the result of an investigation of the losses from Cholera and other diseases of swine during the past twelve months, the destruction of 4,000,000 animals of all ages, and a money loss of more than 20,000,000 dols. One-fifth of the reported loss occurred in the State of Illinois. Next in prominence are Missouri, Iowa, and Indiana, which together lose 10,000,000 dols. Florida, Alabama, Mississippi, and Louisiana have nearly as large a percentage in loss in numbers, aggregating in value 1,500,000 dols. The losses were very small in the country bordering on the great lakes and the Pacific coast. Of the remaining districts, West Virginia comes nearest exemption, and Ohio and the Atlantic Coast States stand better than the alluvial districts of the Mississippi Valley. The apparent loss is equivalent to one-third of the sum of the exports of the pork product last year.

MARE'S MILK.—"I was recently consulted," says Dr. Muter, "by the owner of a valuable foal, with the view of seeing whether I could account for the cause of a persistent tendency to sickness and vomiting which had attacked the animal. I obtained a sample of the mother's milk, and found no signs of pus or other indications of disease, but on analysis it showed: Fat, 1·70 per cent.; sugar, 6·11 per cent.; casein, etc., 2·92 per cent.; ash, ·50 per cent.: total, 11·23 per cent. As the milk was far past the colostrum stage, I judged that the sickness must be due to a most abnormally rich secretion, especially in fat. To make the matter certain, I obtained a series of reliable samples of mares' milk, and made analyses, of which I found the following to represent the mean: Fat, ·50 per cent.; sugar, 6·74 per cent.; casein, etc., 1·67 per cent.; ash, ·41 per cent.; total, 9·32 per cent. Acting on the information thus obtained, the veterinary surgeon in charge, by regulating the diet of the mare, succeeded in bringing the milk to its normal condition, and when this was effected the foal ceased to show the symptoms complained of. The above analyses are interesting, as proving that mares' milk is normally one of the least rich in fat of the milks secreted by our domestic animals. Its analysis, under certain circumstances, is also evidently most important for assisting veterinary surgeons in the judicious treatment of the troubles incident to the infancy of horses. In judging the results of such analysis, the above figures may, in my opinion, be taken as representing the fair average composition of healthy mares' milk."

CAMELS' MILK AND FLESH.—The milk of the camel, which is poor and slightly saline, forms a part of the food of the Arabs and of their horses, and sometimes an inferior kind of butter is made from it. The flesh of that animal is so much esteemed, that when lameness, illness, or any other cause arrests its progress during a journey, it is speedily killed and divided amongst all who have any claim to a share of what is sought with the utmost avidity. —*Chesney's Expedition to the Euphrates*, p. 672.

Correspondence, etc.

MENSTRUATION IN THE LOWER ANIMALS.

To the Editor of the VETERINARY JOURNAL.

SIR,—It is an interesting and instructive fact, and well known to all who have studied the "Book of Nature," that should any of the *Crustacea* get caught by any of their natatory or ambulatory appendages, they can by a spasmodic jerk dismember themselves and thus elude their captors; and what is still more interesting and instructive, is the fact that they possess the power of reproduction. It would be well that this power were possessed by more than the *Crustacea*.

Had Mr. Macgillivray attempted to show that the anatomical and physiological reasons I adduced in support of my contention, that the cow and the mare and other female domestic animals do not menstruate, or, rather, that at their œstral periods the secretion is never so copious nor of such a kind as to give rise to the condition he described in the case which formed the subject of his first communication, I should have had no reason to complain—indeed, I would have rather felt grateful. But when he studiously avoids or evades the reasoning, and tries to make your readers believe that we are arguing about different conditions, and that he is drawing quite justifiable conclusions from data relating to a diseased state of the uterus arising from retention of the usual, and *more* or *less*—(the italics are mine)—sanguinolent œstral products, the result of genuine congenital "Atresia of the Vagina," I have a right to complain, and to say that his communication is very disingenuous and his strictures wide of the mark.

Let me state in as few words as possible, facts which tend to prove that the phenomena of menstruation and œstration, although in their object identical, are, nevertheless, dissimilar in several important particulars. The phenomenon of menstruation is not a separation of blood, or blood and mucus, simply from the body by the uterus; but the molecular removal of a tissue which has become useless, inasmuch as impregnation has failed, and the hæmorrhage is the result of the destructive process by which the useless, material is removed from the body. It is the terminal change of a cycle beginning with the development of a *decidua menstrualis* and ending with its destruction. It is not a process of activity, but of death. To this process Dr. Aveling has applied the term of *denidation*, as it is the carrying away of a *nidus* prepared for the reception of an impregnated ovum, while the process of growth by which the decidua is formed during every intermenstrual interval is called *nidation*. Nor does he believe, as is generally understood, that menstruation is the result of congestion, or that it is the result of erection, as maintained by Rouget, and for the following reasons:—Firstly, organs capable of erection are usually flaccid and lax; when erect, hard and firm. The uterus, on the contrary, is usually hard and firm, but during menstruation it is softer than usual. Secondly, in the most markedly

erectile organs of the body, erection does not give rise to hæmorrhage; and, Thirdly, the sensations which accompany menstruation, even in the mildest form, are of a totally different character to those which attend erection or œstration. The phenomenon of œstration is of a congestive kind, and is entirely the result of ovarian influence. This is proved conclusively by the fact that spayed animals—if the operation be properly performed—never come "in heat,"—and this is, indeed, the principal object of the operation. Further, it is only at this period that fruitful (indeed, any) intercourse can take place.

Since ovariotomy has become an operation of frequent occurrence, it has been found that menstruation, or rather a monthly discharge of blood, has frequently taken place after both ovaries have been removed. These facts, I think, prove very conclusively the dissimilarity of the phenomena, and the difference of the sources of the menstrual fluid and the œstral secretion. The former can only be regarded as a secretion in so far as it contains mucus; and it is something more than a simple hæmorrhage. The source of the menstrual fluid is the whole of the genital tract—from the orifice of the vagina to the infundibulum of the Fallopian tubes; the greater portion of this surface, however, contributes mucus and epithelium only, while the blood, together with the other elements which give the flow its character, and without which it would not be considered menstrual, is supplied by the body of the uterus. Whereas the latter, or œstral secretion, with its microscopic quantity of blood, is supplied entirely by the ovarian rupture, and the mucous secretion from the glands of the vulva; and is completely dried up when the ovaries are removed. This dissimilarity in the respective fluids and the attendant phenomena, is explained by the anatomical differences pointed out by Rouget; but the physiological deductions he draws from them are entirely different. If erection of the body of the uterus was necessary to the phenomenon of menstruation and completion of the act of copulation in either of the species, it would be most necessary in the lower animals; and it is just in them that the erectile structures are absent, or are very sparingly developed.

Here, however, I must leave the subject for the present. In conclusion, I may say that I am too well aware that such cases as Mr. Macgillivray recorded are not uncommon; indeed, they are often met with, and bad cases they too often prove. Of such a nature was the one recorded by Mr. Gray in the June *Journal*, and commented on by Professor Duguid; but I deny that they owe their origin to the cause Mr. Macgillivray ascribes them to. They almost always occur after the first connection with the male; and the fact that they preponderate in white or grey animals points very strongly to some peculiar idiosyncrasy in the constitution, the nature of which we are not able, at present, to determine.

Further, I may say that I shall regret exceedingly if my treatment of this subject should have the effect predicted by Mr. Macgillivray, even upon Mr. Macgillivray himself; for few, I presume, have been more benefited, or have valued more highly his contributions, than myself, and I trust we shall have many more from his fertile pen.

Our thoughts cannot all run in the same groove—indeed, it is undesirable that they should; and I used to think your journal existed for the expression of our opinions, and their discussion by those who did or did not agree with them. If I have over-stepped the boundary of fair criticism, you, sir, are the judge, and you are at perfect liberty to consign this to your waste-basket, or commit it to your columns, and in either case you will oblige

Your obedient servant,

JOHN GERRARD, M.R.C.V.S.

Market Deeping.

HORSE DEALERS AND VETERINARY SURGEONS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In the *Field* of this day, July 14th, I observe an advertisement of "The Ashurst Lodge Company, dealers in horses, Langton, Tunbridge Wells," of which the following is the concluding paragraph :—"N.B. The Ashurst Lodge Company reserve to themselves the right to refuse examination by certain veterinary surgeons."

I confess that this is the first time I have ever heard of the Company ; but in the interest of the profession, would it not be very desirable to have, if not the names of the veterinary surgeons in question, at least the reasons given for refusing to allow them to examine horses? The announcement is so unusual and extraordinary that some explanation is very necessary. Can the local veterinary surgeons throw any light on the subject ?

Your obedient servant,

J. LAMBERT, F.R.C.V.S., 17th Lancers.

THE FELLOWSHIP DEGREE.

To the Editor of the VETERINARY JOURNAL.

SIR,—Permit me to make some remarks on the conduct of our President at the second special meeting of the Council, held on the 29th day of May, 1877, and reported in this month's issue of the *Journal*. There I read that the President offered to allow Captain Russell to come up for his examination as a Fellow, without passing the prescribed examination by the College of Preceptors. This gentleman graduated, I ascertain from the Register, in 1872. Thanks to Mr. Reynolds, his intention was thus far frustrated, and he had to give the usual three months' notice to alter Bye-law 50.

At our annual meeting, held on the 7th of May, 1877, I asked the President a question relative to the aforesaid bye-law, and was told that no matter how well a man had been educated—unless he was or had been a professor at a school affiliated with the Royal College of Veterinary Surgeons, or could produce a certificate of graduation in arts from a University—he MUST PASS an examination by the College of Preceptors. Why, I would ask, should the President be so anxious to override this Bye-law 50 for the said Captain Russell at a minute's notice? My own opinion is that it was "*Favouritism*"—an act I scarce thought he would condescend to, and simply because they both are ex-army men, and he wanted to oblige Russell above any other man in the profession, at any risk or cost. It will be advisable for the President in future to duly consider and well weigh the effect of his actions on the minds of his brother professionals, before he wishes to accommodate a friend by breaking a bye-law which he himself has assisted in making binding on all candidates for the Fellowship Degree. I can but add, with regret, that I am disgusted with this instance of "*Favouritism*," which I sincerely trust will be a caution to any gentleman who may in future fill the responsible office of President, whose actions should be "above suspicion."

I have just seen a brother professional who has had twenty-three years' service in India, and was formerly a pupil of Mr. Wm. Field, of Oxford Street, who knew Russell intimately out in India, and he does not give a very glowing description of the ex-army man's abilities ; and I will guarantee that the two examinations I passed at the London University, preparatory to the final one for an M.D. degree, when studying for the medical profession, were as stringent as Russell had to submit to for his commission in Her

Majesty's army. Your kind insertion of the above in your valuable journal will greatly oblige, Mr. Editor,

Yours truly,

Kingston, *July 6th*, 1877. WM. FURNIVALL.

[We are very sorry Mr. Furnivall should write so strongly, and make such serious reflections on the President of the Royal College and Captain Russell. We are certain that the charge of "*Favouritism*" is absolutely without foundation, and have reason to know that the two gentlemen are personally entirely unknown to each other. The President acted in the instance alluded to, as he has ever done, impartially, and with a full knowledge of the circumstances. Officers, before they can hold a commission in the army, must pass an examination which, so far as our experience leads us to believe, is so severe as to be almost equivalent to graduation in Arts. The Bye-law referred to was intended to make sure that the candidate for Fellowship had received the education of an ordinary English gentlemen, and this is the standard required for the line officer. It was, however, pointed out by Mr. Reynolds that the Bye-law was more stringent, and that Captain Russell was not admissible; notice was therefore given to amend this Bye-law. In drafting new Bye-laws, it is difficult to avoid mistakes and omissions. In Acts of Parliament, drawn up by men of great experience, it is generally necessary to amend them, even repeatedly, in succeeding sessions. This was foreseen in drafting these Bye-laws, and the type was kept standing; but so carefully was the drafting done, that the mistake above alluded is the only one which has yet been brought to notice.]

CARNIVOROUS COWS.

To the Editor of the VETERINARY JOURNAL.

SIR,—I send you this account of a case, thinking that if you consider it of sufficient interest to members of the profession, you might like to insert it in the *Veterinary Journal.*

On the evening of June 10th, the cowman of a gentleman living near here called to request Mr. Anderson, M.R.C.V.S., to go out with him, as one of the cows was expelling her "puddings" *per rectum.* In the absence of Mr. Anderson I attended the cow, and found her standing in the byre, with four twisted cord-like appendages hanging from her rectum to the length of about eighteen inches, covered with fæces, and cold to the touch. I saw directly that they were intestines, but was naturally puzzled that there was no relaxation of the sphincter ani, or any protrusion of the rectum; also that the intestines exposed to view seemed to have become split up into four distinct cords. I inserted my hand *per rectum*, with the object of making an exploration of that region; and after having followed up these cords nearly as far as my arm could reach, I suddenly found they terminated in free ends, on which I withdrew my arm with the cords, which came away with great ease.

I then washed the intestines (for that they were intestines I never for a moment doubted), and after unravelling them, proceeded to make a careful examination, and found that they were the small intestines of some herbivora, probably a sheep; that they contained a small amount of finely powdered grass, and that they were about ten feet in length.

On making inquiries as to how the cow could have got at them, I found that the offal of the sheep killed for consumption in the house was always thrown into the pig-stye; but most probably some dog had contrived to possess himself of a portion and carried it into the field where the cows grazed, and there left part of it, and the cow in question had eaten it.

Now, I should like to know if cows have ever been known to become carnivorous? How the animal managed to swallow about ten feet of small intestines without breaking them, how they were made to pass through the third stomach, and why the gastric juice in the fourth had not had more effect upon them than only to digest the serous coat of the intestines, is a mystery to me.

* * * * * * *

On the 13th ult., two or three days after sending you the account of my finding sheep's intestines in a cow's rectum, I made a *post-mortem* examination of another cow which died suddenly—that is, after four or five hours' apparent illness, for she was seen the previous night in apparently good health, but in the morning was found to have "taken the ground," and to be quite comatose. She died at about 11 o'clock that morning. Whilst making my examination *post mortem*, I found in the rumen a quantity of sheep's intestines, so matted together that at first sight they looked like a bunch of rags. This makes the former case to my mind more perplexing than ever; for in the latter the intestines had evidently become entangled together through the motion of the rumen; whilst in the first case referred to, the intestines were not at all matted together. If it had not been for the great anxiety shown by the man in charge of the first-mentioned cow as to her "puddings," I should almost be inclined to think some one had forcibly introduced the extraneous intestines *per anum* into the rectum.

I am, sir, yours truly,
ROBERT MORETON, M.R.C.V.S.

Hexham, *July* 1.

OBSTETRIC CASES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—In reply to your remarks on the above in the *Journal* for June (p. 398), I am sorry I cannot throw any more light on the subject, as the cowman has left the situation; but in answer to inquiries at the time, I was told that the calf presented the ordinary appearance of a not quite fully matured calf, *minus* a part of one leg from the hock downwards, and that he did not notice, or look for, any defect in the placental membranes.

I am, yours obediently,
C. W. GREGORY.

Bristol, *June* 18, 1877.

SPAYING SWINE.

To the Editor of the VETERINARY JOURNAL.

SIR,—I venture to make an appeal (through the columns of your journal) to the feelings of the public in behalf of that very necessary and useful animal, the pig.

The practice of "spaying" sows is, I presume, generally known, though I fancy that few persons (comparatively) have been eye-witnesses of that operation. But I feel quite assured that those who have will confess that, even by the most skilful performer, it is one of the most painful that the animal world has to endure: and how much worse is it in ignorant hands, by which the torture must be much increased and prolonged!

I know it is, and has been, contended that at the time the sow is "hogging" she will lose condition, and that the sexual derangement interferes with her fattening. To this assertion I answer, that I have found sows that have not

been spayed fatten just as well as the spayed ; and I am now eating bacon of an unspayed sow, of the *finest quality.* Moreover, I have the opinion of one of the largest butchers in London, who only the other day assured me that the practice of spaying sows is quite unnecessary.

I should be *much* gratified if the above remarks would induce those who operate on sows at once to give it up, and that those who will not should be compelled by legislation to abandon a cruel and useless practice.

I remain, sir, your very obedient servant,

C. J. STEVENS.

Ravenscroft, Hammersmith, *July* 2, 1877.

TO CORRESPONDENTS.

COMMUNICATIONS from Professor Law, Messrs. Robinson, Wolstenholme, Greaves, and others, will appear in our next.

A correspondent forwards the following advertisement from a London daily paper. We trust that our inserting it in the Journal of the profession will not be accepted as giving any countenance to such an unhealthy and incompatible combination as that of horse-dealer and veterinary surgeon :—

> "IF you WANT a HORSE, Hackney, Harness, or Hunter, go to W. Sherley, horse-dealer and M.R.C.V.S.L., Twickenham Common. Ten minutes' walk from the station."

We have received a sample of Messrs. Hewlett's *Linimentum Saponis c. Myrrh et Benzoin,* which we shall try when opportunity offers, and report thereon.

Mr. J. Cammack is thanked for his generous remarks. We shall continue to labour, as we have now done for so many years, earnestly and disinterestedly, in promoting veterinary science and the welfare of the whole of its members, irrespective of the schools at which they may have studied, or their nationality. Our views and aim are too catholic to be limited by the walls of a teaching establishment. While we desire a large measure of success to all the schools, we are convinced that improvement can only be effected by the entire body of the profession.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from Professor A. Smith, Toronto ; J. B. Wolstenholme, Manchester ; G. W. Bates, Toronto ; J. Cameron, Berwick-on-Tweed ; R. Moreton, Hexham ; Dr. Pavy, London ; C. W. Gregory, Bristol ; J. Colam, London ; J. D. Allman, London ; C. J. Stevens, London ; Hewlett and Son, London ; Professor Law, Cornell University, U.S.A. ; W. H. Coates, London ; W. Furnivall, Kingston ; J. W. Hill, Wolverhampton ; J. Reynolds, Liverpool.

BOOKS : *Chenier,* De l'Atrophie du Coussinet Plantaire ; *Megnin,* Monographie de la Tribu des Sarcoptides Psoriques ; Bulletin de la Société Centrale de Paris ; Report of the Brown Institution ; Annual Announcement of the Montreal Veterinary College ; *Zipperlen, Mandel,* and *Zundel,* Le Vêtérinaire de la Ferme.

JOURNALS : *Archiv für Wissenschaftliche und Practische Thierheilkunde ; Recueil de Méd. Vétérinaire ; Archives Vétérinaire ; Journal de Méd. Vétérinaire et de Zoötechnie ; Wochenschrift für Thierheilkunde ; Edinburgh Medical Journal ; Practitioner ; Live Stock Journal ; British Medical Journal ; Practitioner ; Thierarzt.*

NEWSPAPERS : *Farmer ; Mark Lane Express ; Agricultural Gazette ; Live Stock Journal ; North British Agriculturist ; Australasian Sketcher ; Illustrated Australian News ; Australasian ; Midland Counties Express ; Bournemouth Visitors' Directory* (3 copies); *New York Spirit of the Times* (2 copies).

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

SEPTEMBER, 1877.

MILK-SICKNESS.

BY PROFESSOR JAMES LAW, F.R.C.V.S., CORNELL UNIVERSITY, ITHACA, U.S.A.

LAST year, after a long and unavailing search, I had concluded that this malady no longer prevailed on the American continent. But recent events have thoroughly undeceived me; and having unwittingly misled the editor of the *Veterinary Journal*,* it is only right that I should now place the matter in its true light, according to my present information. Professor Kerr testifies to the prevalence of *Milk-sickness* every summer in the mountains of the Blue Ridge, which runs down the western portion of North Carolina. Dr. Salmon, a veterinary graduate of Cornell University, and now lecturer in the University of Georgia, speaks of its prevalence among the same hills farther south. Drs. Phillips and Schmidt are acquainted with the disease as existing on the upper waters of the Scioto, Ohio; and, finally, Mr. Beardsley, a very intelligent student from Illinois, has frequently seen the affection in that and adjacent States.

Another *raison d'être* of this communication, is to be found in the idea that the malady is identical with *Malignant An-*

* See the *Veterinary Journal* for June, p. 432.

thrax,—a doctrine first enunciated by Heusinger, and adopted by many others. There is some ground for this opinion in certain records of alleged *Milk-sickness* that have found their way into the medical papers; but a full consideration of the subject will show, clearly enough, that in these instances the narrators have been mistaken, and have described the one disease under the name of the other. The two maladies agree in having their origin in malarious or unimproved lands, in their communicability to the majority of warm-blooded animals, in their being transmitted only by contagion, and in the fact that both have vegetable organisms in the blood; but they differ widely in their local manifestations, in the rapidity of their progress, and in the permanence of their evil effects. *Malignant Anthrax*, when implanted in a new system, may give rise to any one of the varied forms of that disease; whereas *Milk-sickness* produces *Milk-sickness* alone, and never *Gloss-anthrax*, *Pharyngeal-anthrax*, *Enteric-anthrax*, *Hæmorrhoidal-anthrax*, *Splenic-anthrax*, *Malignant Pustule*, *Black-quarter*, etc. As surely as the *Intestinal Fever of swine* and *Texas Fever* are distinct from *Malignant Anthrax*, though habitually confounded with it in the past, so surely is *Milk-sickness* a distinct and altogether independent disease.

Etiology.

There is no uniform geological condition in the different unhealthy districts to account for their dangerous tendencies. Dr. Phillips says: "It is found in localities among the Green River hills in Kentucky, it occurs in some localities along the Wabash River in Indiana, as well as here and there in our own heavily timbered uplands in north-western Ohio." And yet a constant condition of its prevalence is the unreclaimed state of the land on which it appears. In the Carolinas and Georgia it is found only on the highest mountains; and in Kentucky, Ohio, Indiana, and Illinois, only on the heavily timbered lands or marshy river bottoms in their virgin condition. But the removal of the primeval forest, the drying of marshy spots, and the general cultivation of the soil, is the signal for its disappearance; and thus Dr. Phillips again remarks: "In many localities

where it formerly prevailed to a dangerous extent within the memory of the present generation, as in Green and Madison counties, in the State of Ohio, it has now, by reason of the cultivation of the soil, been entirely exterminated. Indeed, the disease may be said to be rapidly disappearing before our extending civilization."

His next statement must be received *cum grano salis* :— "Infected localities are found to be uninfluenced by the quality of soil or state of drainage ; whether the soil is underlaid by rocks of lime, sand, or clay; whether watered only by surface ponds, or by pure running springs or brooks. It prevails equally in malarious and in non-malarious districts. It is even yet met with in small infected localities in some of the hilly counties of southern Indiana, and in Kentucky, where Ague either never was, or has long since disappeared." Now, here it must be insisted upon that all malarious emanations do not produce the same disease. We all know how thoroughly *Malignant Anthrax* has become genetically associated with marshes and rich soils overlaying an impervious subsoil. Yet, from where I sit, I can see in the distance a marsh of over 1,000 acres, which proves a hotbed of Ague for the human being, but upon which the domestic animals graze with the most perfect impunity. On a visit some years ago to the timber lands of Maine, I was struck with the extended marshes on the newly cleared ground, and no less with the fact that Ague was unknown. The rich damp soils bordering on the Gulf of Mexico are believed by the inhabitants to be most salubrious, yet they infallibly develope *Texas Fever* in strange cattle, though not necessarily *Anthrax* nor *Milk-sickness*. Whatever may be said of Ague, these enzoötics are by no means necessary concomitants of marshes ; but when introduced into a locality, their permanence is directly dependent on the nature of the soil and the imperfection of the drainage, and they may be thoroughly eradicated by cultivation and improvement. Dr. Phillips himself affirms this, when he says that "nothing but the clearing off the timber and the cultivation of the soil is known to exterminate it." Now, it can be safely affirmed that no matter what the general character of any soil or subsoil, there are usually found circumscribed beds of clay or other impervious

material that will retain moisture and generate malaria in the unimproved state of the district. But in the *Milk-sick* localities the retentive nature of the soil is usually remarked upon. Thus the Blue Ridge in the Carolinas is formed mainly of crystalline granite rock, set on edge with a slight inclination eastward, and thus forming circumscribed flattened plateaux or basins, in which the water is often confined.* So it is with all the other infected localities: they are rich, unbroken lands, more or less dotted with marshy spots, or overflowed by rivers; and the best proof that these conditions are essential to the preservation of the poison, is that it is never found to exist in the soil apart from them.

Again, this agrees with other diseases of a malarious origin, in showing itself only after the soil has dried out in late summer and autumn. This is the universal testimony; and although Dr. Phillips says he attended a well-defined and fatal case during the intense cold of the winter of 1868, it must be borne in mind that this was in the human subject and derived from the infected animal product,—not from the infected locality.

Many have attributed the disease to the ingestion of poisonous plants, and notably to the *Eupatorium Ageratoides* and *Rhus Toxicodendron;* some, indeed, allege that they have produced the disease at will, by feeding with the latter plant, and allowed a recovery by withholding it. This would account for the prevalence of the malady mainly in wild lands and at particular seasons when the plants were at a particular stage of their growth. But it fails utterly to account for the fact that the poison is manifestly reproduced and multiplied in the animal system, and that the smallest quantity of diseased flesh or milk may infect fatally. These plants, too, exist abundantly in the other States, where *Milk-sickness* is absolutely unknown. Others have attributed the disease to mineral impregnations of the drinking water or food; and cobalt has acquired a bad reputation in this respect. But the arguments against its origin in phanerogamous plants are equally conclusive here; as no mineral

* Dr. Schmidt, writing on May 1st, says: "It is not common at this time of the year, nor until water and food get more scarce; then it will be plentiful in low swampy places, as it is never known on high (dry?) land."

could be multiplied in the system or animal products, so as to determine more deadly results in the second subject than in the animal from which it was derived. If, then, the disease has been produced by giving thoroughwort, poison oak, or cobalt waters, it is because these agents contained its specific germ as an accident, and not as an essential element.

The recent microscopic observations of Dr. Phillips have done more to elucidate the cause of *Milk-sickness*, than all the wild hypotheses and crude observations of a century before. He has found vegetable organisms in the blood ; and as these will explain fully all the peculiarities of the disease, they may be provisionally accepted as the probable *disease germs*. He says: "In the month of June last, I had under my care a typical case of *Milk-sickness*. I made a careful microscopical examination of the urine every day ; and upon the fourth day after the case came under my care, I drew a few drachms of blood, and immediately placed it under the microscope at the bedside, while yet warm and liquid. I found it contained a great number of living, moving spiral bacteria, similar in their general appearance to those spiral bacteria described by Professor Lebert as abounding in the blood of Relapsing Fever patients. I also found in the urine of that patient those same spiral bacteria, and co-existing with them, the sphero-bacteria, in segments of two to six or eight. I had opportunity to examine the blood of but one patient; the urine of several was obtained and examined, furnished from patients under the care of one of my professional neighbours—all showing the presence of both these described forms of bacteria. I sent specimens of the blood and urine to a professional friend, having a State reputation as a microscopist and pathologist, and had the pleasure of receiving, within a few days, a full endorsement of my observations."*

This will sufficiently account for the fact that particular districts, fields, woods, waters, or plants are at times found to be infecting ; while the same plants or waters, containing identical chemical elements, are at other times or places innocuous. It will further explain why only a certain proportion of the animals

* It ought to be stated that Dr. Schmidt denies the existence of bacteria in the blood of his cases.

or men exposed to the morbid influence succumb to it; while the remainder, whose systems or vital fluids are in a condition chemically incompatible with the propagation of the bacteria, escape. It is quite in keeping with the fact that the disease is produced in widely different conditions of climate, vegetation, soil, geological formation, and management; and that no combination of these is able to produce it, unless the disease germ has been introduced. It explains, too, the permanent preservation of the virus in cheese and other comparatively stable products of the sick. It is equally in keeping with the following circumstances, relating to what may be considered predisposing causes of the disease:—

The excess of effete matters in the blood evidently favours its development. Thus, overwork, severe exertion—even for a limited time, want of sleep (as in the case of the members of a family watching with a sick relation), a fit of constipation, or a slight attack of malarial fever,—all strongly conduce to the development of the malady. It is curious to note that children often suffer less than adults, probably because their emunctories are usually more free, and they are less exposed to exhausting and depressing conditions. In infected cattle, the symptoms are easily developed or aggravated by subjecting them to fatigue; and in *Milk-sick* districts, it is a common practice to test the soundness of stock by giving a good run before purchasing.

Another very remarkable fact is, that milch cows rarely show the disease, though conveying it to other animals through their milk. Dr. Phillips says: "It is not unusual, where persons suffer from this disease, to find, at the same time, calves using the same cow's milk, sick with '*trembles*'; while the cows are to all appearance in perfect health. The dry cattle are much more frequently attacked with 'trembles' than cows which are secreting milk in abundance." To the same purpose Dr. Schmidt remarks: "Cows giving milk do not show the disease at all, but their calves have it all the time as long as they suck the milk; dogs fed on milk get it." His opinion, as stated further on, is that all the poison passes into the milk, and thus the cow gets rid of the effects on her own system. This is probably the explanation of the immunity shown by Dr. Graff's sow, which was fed for a fort-

night on poisonous flesh that had killed dogs. If at the time secreting milk, she would naturally escape. Or she might be merely an insusceptibe subject at the period of the experiment. At least, our modern authorities will allow no such exemption for the pig. Dr. Phillips says: "A calf gets it from the cow, in the milk,—the calf dies; and the pigs which eat the carcase get the disease and die; the dog which eats the pig, and the buzzard which eats the dog, all in due time contract the same disease." Dr. Schmidt and others speak in similar terms.

This transmission of the disease through a long series of successive victims, which has been shown in "scores of careful observations," demonstrates the important fact of the specific nature of the poison and its multiplication within the system; while any simple mineral or vegetable poison in similar circumstances, would soon have been rendered inert by dilution.

As might be inferred from the name, the disease is generally caused in man by the use of the milk. Phillips says that "people rarely contract the disease from the use of butter or beef," founding his opinion on the general sale of these articles produced in infecting localities, and the rare occurrence of Milk-sickness among the consumers. Dr. Schmidt is of a different opinion, and says: "I am certain that if the physician's attention were drawn to it in your large cities, and if every case of obstruction of the bowels, with vomiting, were closely watched, it would not be put on the register as inflammation of the bowels, or obstruction of the bowels; for I am certain you often see it, but it goes for something else. . . . Look for it in the fall, and even winter, as I have had cases, two or three here, in January 1871 and 1873." This is in keeping with Dr. Graff's views: he remarked, forty years ago, that hundreds of men died yearly of this affection in the Western and South-western States.

Dr. Schmidt thinks he has proved that the poison resides mainly, or exclusively, in the cream and butter. "I have experimented often in the last ten years, and found that the poison is in the cream and butter. I had calves to be given skimmed milk, without result; then had the same calves to suck the milk from the cow, and they soon had the disease; gave the dog the same milk, and he soon had it." He goes on

to instance a number of cases in which families had been infected by the butter; in which an abstinence from milk and butter had subsequently protected for years; and in which the giving way of a single individual to the strong craving for butter again brought on the disease.

But there is reason to believe that neither milk nor butter is essential to the development of the malady in man, but that the human being contracts the affection just as do cows and other animals. Dr. Phillips adduces cases in which the patient denied having used either milk, butter, cheese, or fresh meat for months prior to the attack. Mr. Beardsley, too, was acquainted with wells in the woods that had the general reputation of producing *Milk-sickness* in man or beast that drank from them.

The presumption is, that all races of domestic animals are susceptible, and may contract the disease, either from the milk, flesh, or other products of the sick, or directly from ingestion of the poison in food and water. Phillips even suggests the air as a possible medium of infection, but adduces no facts in support of the opinion.

Symptoms.

In *milch cows*, these may be so slight that they are entirely overlooked unless the animal is excited. The outlet for the poison through the mammary secretion appears to protect these, in a great measure, from the graver phenomena. When violently excited, however, and especially when driven fast for some miles, they are seized with a rigor and all the more dangerous symptoms of the disease. The breath, too, has at all times that fœtid, sweet, mawkish smell which characterises the disease in all animals.

In *steers*, and other *dry cattle* and *sheep*, the condition is characteristic, even in decubitus: a position which is maintained by the animal as much as possible, evidently because of the great nervous prostration and extreme muscular weakness. The head resting on the ground, the sweetness of the breath, the blood-shot eyes and the staring coat, are marked features, though appetite and rumination may be preserved. The worst cases

lie prone, with head extended on the ground, and show an utter indifference to all sense of fear or danger; and the wildest of them whine under the prostrating influences of the disease, and allow themselves to be handled in any way without the slightest effort at resistance or escape. The nervous debility and torpor are not confined to the voluntary muscles, but all the organic functions are largely impaired, the bowels in particular are obstinately constipated, and when death ensues it is by asthenia.

The milder cases, those even that present no appreciable symptoms when at rest, are seized with trembling when made to undergo the slightest exertion, assume a very haggard appearance, drag their limbs slowly and stiffly, and after a drive of four or five miles will often suddenly drop down dead.

The prostration is even more marked in sheep, and in very many cases they seem to be quite unequal to the task of rising.

In vomiting animals, emesis is a prominent symptom. *Calves* tremble while sucking, and often stop suddenly, eject the contents of their stomachs, fall to the ground, and perish. In *pigs* and *dogs*, vomiting and constipation are prominent symptoms; swine burrow under their litter, and are roused with difficulty, and dogs get "the slows," and are unable to follow their master. The result of exertion is the same in all.

Symptoms in Man.—In the human being, the disease has been more carefully studied. "The first symptoms usually manifested are feelings of languor, with muscular weakness, and an unusual sense of fatigue, aversion to food, nausea, and vomiting. The patient soon seeks a recumbent posture, and the disease is rapidly developed. On examination the following objective symptoms are noticed: The pulse not much disturbed, occasionally increased to 80 or 90, but generally slower than normal, and soft; the heart and large arteries apparently moved by an impulse greater than normal, as if to overcome the loss of tone in the arterioles and capillary vessels, which are somewhat engorged, as indicated by the flushed, or rather bronzed, and dirty appearance of the skin,—which is never blanched nor cyanitic, as in pernicious fever. The surface is not increased in temperature, but rather diminished. The temperature as

indicated by the thermometer is usually below 100°, sometimes not above normal. The condition of the skin is dry, the respirations are deep, and suggestive of one labouring from a sense of fatigue.

"The breath is fœtid and of a peculiar odour; the stomach and bowels are apparently empty. The abdomen retracted so that the abdominal aorta is usually seen and felt pulsating, so as to attract the attention of the patient and nurse; there is a complete cessation of peristaltic movement, and resulting constipation; the tongue is relaxed, large, and soft, with a dirty-looking umber-coloured coat upon it.

"All the secretions and excretions are rapidly diminished; only the tongue remains moist, from excessive nausea and efforts at emesis. The urine is rarely voided, except at the request of the medical attendant or nurse, and then in diminished quantity, clear and limpid, and generally below the normal specific gravity; it rarely deposits a sediment. The countenance has an apathetic expression. The mind is occasionally irritable, but generally in a state of hebetude expressive of utter indifference or *abandon;* delirium is a rare symptom. The appearance is usually somnolent, but he rarely has a profound sleep.

"This remarkable condition usually increases from day to day, the muscular weakness daily increasing, until the patient cannot command the energy of will or power of muscle to raise his head or hand, or even protrude his tongue, upon your most urgent bidding.

"The vomiting persists, ejecting everything that is swallowed. The prostration increases; soon the eyes remain open, the cornea and conjunctiva become dry, the process of winking being no longer performed. The patient is generally intolerant of any covering, especially upon his extremities; he is oblivious to all sense of indelicacy; the decubitus is peculiar, indicating a preference for that position that brings the greatest surface of the body upon the bed for support, the head in the most dependent position, preferably hanging over the edge of the bed. Thus from day to day he suffers, and becomes gradually more oblivious to all surroundings. From a state of stupor he

gradually passes into a state of coma more or less profound. The vital functions of respiration and circulation become gradually weaker. Stasis in the capillary circulation ensues—first in the brain, the viscera, and then in the extremities; and thus the weakened heart, unable longer to keep in motion the increasing volume of nearly stagnant blood, gradually ceases its movements. In the same manner a failure of all the vital forces ensues, and death steals over the unfortunate victim without a struggle.

"There are some cases that run an exceedingly mild course, being characterized only by a few days of debility, loss of appetite, and nausea, with a gradual restoration. Others, like the fulminant form of cerebro-spinal Meningitis, completely overwhelm the subject, and death by coma ensues within one or two days from its commencement. Ordinarily, from ten to twelve days are required from the period of invasion to the period of convalescence.

"Convalescence in this disease is as peculiar as any other feature in its clinical history; and to this peculiarity I would invite especial attention, inasmuch as these facts are important in the study of its special pathology. Convalescence is rarely marked by a critical evacuation of any kind. I have no recollection, in any case, of a critical perspiration to mark the initiation of convalescence. A moist skin during the active stage of this disease, in my opinion, never occurs. Diuresis, or Diarrhœa, as a rule, does not occur as a critical discharge. It is true, a resumption of these functions occurs, but not in quantities to be regarded as critical. I have occasionally seen Diarrhœa occur as a sequel, with Typhoid symptoms; but I have always regarded it as a result of injuries inflicted by the injudicious use of drastic purgatives, or as an evidence of uræmic poisoning from retained excreta. Ordinarily, convalescence is marked by a cessation of the characteristic symptoms, and a gradual resumption of the impaired and suspended functions,—only this and nothing more. There is a popular belief that a patient once suffering from this disease never fully recovers; and that, upon exposure to heat and fatigue, he is liable to a relapse. This, it is true, does occur occasionally, but

not as a rule. On the contrary, I could point to scores of cases where recovery has been perfect and complete." (Dr. Phillips.)

Mr. Beardsley also testifies to the permanency of the effects, and liability to relapse in many cases.

Lesions in Cattle.

Beside the presence of fungi in the blood, and the tendency to capillary stasis in different organs, the following have been noticed:—"The stomach and intestines are inflamed (?); the mucous coat is measurably destroyed; the entire coats are in some cases gangrenous; they have a dark or black appearance, which is not due to a mere congestion; the coats are not firm, though they are not easily broken down. In the ventriculus, or paunch, and indeed throughout the whole alimentary canal, is found a substance conglomerated and resembling cemented sawdust, in the shape of balls, somewhat elongated, and perfectly adherent to the coats of the digestive tubes." (Dr. Schmidt.)

Pathology.

To any one who has intelligently followed the above description, it must be abundantly evident that this affection is essentially distinct from *Malignant Anthrax*. Though, like that malady, it is enzoötic in malarious localities, and is communicable by ingestion of the morbid products of the diseased, and though bacteria are present in the vital fluids, it is in no respect interchangeable with that, and never gives rise to *Malignant Pustule*, *Black-quarter*, *Splenic Apoplexy*, etc. On the contrary, it is a notorious fact that in *Milk-sick* men and beasts alike, enlarged spleen is never observed; and thus physicians are able to demonstrate its essential difference from all other forms of malarious fever. It has, moreover, a period of incubation, varying, it is true, from a few days to as many weeks or even months, yet presenting a regularity that is not observed in the genuine *Malignant Anthrax*. Then the *Milk-sickness* virus expends its energy on the great nerve centres, and the most prominent symptoms are those of asthenia, muscular weakness, torpid bowels, and impaired functions generally. Though capillary stasis occurs, there is not the gelatiniform nor bloody

extravasation, nor the extensive sloughs, by which Anthrax is characterized. The disease is slower and more regular in its progress, and is, on the whole, more amenable to treatment, than the general forms of Anthrax.

It is manifestly equally distinct from the different malarial fevers. It shows no periodicity in man nor beast; it does not lead to increased body temperature, nor to enlargement of the spleen or other blood glands; it is communicable from one subject to another in a way that malarial fevers in general are not, and it is in no degree controlled by quinia or other anti-periodics.

The whole morbid phenomena point to the introduction of a poison capable of proliferation in the animal system, and of transmission from system to system,—a poison which expends its power mainly on the nervous centres, particularly those of the sympathetic system, and paralyses all the various vital functions, even to those of circulation and nutrition. Even tissue-waste is arrested, as shown by the small quantity and low density of the urine, and the absence of urea in the blood. The poison is probably concentrated in the alimentary canal, making up a large part of those firm masses described by Dr. Schmidt; but it also exists in the blood, as witnessed by its propagation through the flesh and milk. One attack affords no immunity from a second, but rather predisposes to it; and though apparent recoveries will take place as early as twenty-four hours from the onset, it is evident that such are but improvements, and that the poison is not entirely eliminated or destroyed, as any over-exertion will cause a relapse with all the violence of the first attack.

I hope during the present summer to obtain specimens of the virulent products, and may be able hereafter to speak more definitely as to the pathology of the disease. Meanwhile I prefer to submit these facts only, as bearing on the subject.

Treatment.

With my present readers, this can hardly possess sufficient interest to warrant a full consideration. By some, purgatives have been used heroically, as many as seventy-five large and

powerful doses of physic having been given (and retained) in twice that number of hours, together with a great many large and active enemata. Others, looking on such measures as probably more hurtful than beneficial, have sought to stimulate the nervous system by strychnine, and the vaso-motor system especially by belladonna, while they allayed thirst and solicited the action of the kidneys by citrate of magnesia, nitrate of cerium, or bitartrate of potash. Still others claim a constant success from five or ten grain doses of calomel, repeated four times in twenty-four hours, and ice placed in the mouth to allay the thirst. All acknowledge the value of a free use of brandy or whisky as a stimulant, in cases in which it can be retained, though the vomiting often renders it impossible to avail oneself of these agents. It does not seem to have occurred to any one to try the effect of such agents as the sulphites, iodides, chromates, carbolic acid, and the like, in destroying the poison or setting a limit to its increase.

CHRONIC DIURESIS.

BY GRIFFITH EVANS, M.D., M.R.C.V.S., ARMY SERVICE CORPS, IRELAND.*

THIS is a disease which I know very little about practically, and I have not been fortunate enough to find anything written upon it of much importance, because I have not, for several years past, been within reach of a good medical library. From conversations with other veterinary surgeons, I am led to believe that the disease is not very uncommon among horses; and it is with a view to elicit knowledge from such as are able to instruct, that I submit the following case which occurred in my own practice, with a few remarks, for consideration and discussion.

Professor Williams's book is by far the best work we possess on the *Principles and Practice of Veterinary Medicine.* He has a chapter in it on *Polyuria*—in which he states: "The intrinsic causes are those originating in defective assimilation, or rapid

* Read at the meeting of the Yorkshire Veterinary Medical Society on July 11th.

tissue metamorphosis—owing to the actual presence of the glandous poison, and to a condition of the system tending to its development: the polyuria being induced by the action upon the kidneys of those constituents, products of tissue change, which are naturally eliminated by them." But further on he says: "The urine is of a very pale colour, sometimes as clear as clean water, and has a specific gravity little higher than distilled water, the specific gravity of which is 100; whilst that of diabetic urine is from 100·2 to 100·3, and that of healthy urine in the horse ranges from 100·30 to 100·50."

The latter quotation is not consistent with the former—for how could the specific gravity of the urine be *reduced* so much by an increase of the products of tissue change, which are naturally eliminated by the kidneys? Is it probable that an increase of urea would cause an increase of water in a far *larger* proportion? I do not believe it. I would respectfully ask the eminent Professor to reconsider this chapter, for it seems to me that he has confounded *Azoturia* or *Polyuria* with *Hydruria*. These are several forms of Diuresis or Diabetes Insipidus, and it is of no small importance to recognise their essential differences.

The remark made by Professor Williams in the above quotation, on the relation that sometimes exists between Glander Poison and Polyuria—as cause and effect—is of the highest interest to us. He says before that, "When induced by no traceable cause, and where change of diet has no effect in checking it, the disease (Polyuria) is generally premonitory to Farcy or Glanders, and is symptomatic of the breaking up of the tissues of the body." In his chapter on Glanders and Farcy, page 192, he also writes: "The most common forerunner of Glanders, more particularly of that form of it known as Farcy, is the disease commonly called Diabetes Insipidus or Polyuria. It cannot be said that in Diabetes there is any obstruction to the excretion of degraded tissue; indeed, the reverse is the case—excretion of urine being enormously increased. If we look deeper into the matter, we shall, however, see that the Polyuria is but a result of rapid tissue changes, rapid emaciation of the body being a most prominent symptom, with debility arising

from degradation of tissue, and from the presence of the degraded materials within the circulatory fluid. So apparent is this condition, that it has been truly said that Diabetes, when arising from no cognisable cause, is indicative of a general breaking-up of the constitution."

It is this relation between Diabetes Insipidus or Polyuria and Glanders, that commands our earnest attention. Though I have no experience to prove it, I find good reason to believe that it is true. But is it true in respect to *every form* of Diabetes Insipidus? I think not. I believe it is true only in respect to those cases in which there is an increased elimination of the products of tissue change by the kidney. There is a sentence in the above quotation, which shows that when he wrote it Professor Williams did not recognise the fact, that an increased discharge of *urine* does not necessarily imply an increased elimination of *urea*. The sentence is this: "It cannot be said that in Diabetes there is any obstruction to the excretion of degraded tissue; indeed, the reverse is the case—excretion of urine being enormously increased." Now, I am sure that he will allow that there must be an enormous increase of urine excreted, without any increase of degraded tissue products. When I read that passage first, I was disposed to think it was a misprint of *urine* for *urea*, but I failed to find the important difference recognised by him elsewhere in treating the subject.

Polyuria is generally understood to mean much-*urea* rather than much-*urine;* and is synonymous with Azoturia, a species of Diabetes Insipidus. Hydruria is another species of the same class. Now, if Polyuria, and not Hydruria, is that which so commonly precedes Glanders, like a herald to warn us of the enemy coming, it is well we should know it. The herald should give no uncertain sound: such a misunderstanding might lead us to very serious consequences, and ruin the reputation of a young practitioner. We cannot be too precise in our knowledge of every symptom that may be called "suspicious" of Glanders.

There are two forms of Diabetes. *A.* Urine increased in quantity, containing an abnormal constituent—sugar; the specific gravity increased: *Diabetes Mellitus.* *B.* Urine increased in quantity, containing no abnormal constituent; specific

gravity may be either above or below normal: *Diabetes Insipidus.*

There are three essentially distinct forms or species of Diabetes Insipidus. Dr. Willis has thus named them :—

A. HYDRURIA. Water in excess. "Solid matters in their due proportion to each other, but in a very small ratio to the water" (Watson). Specific gravity low.

B. AZOTURIA ; *synon.*, POLYURIA. "A condition in which a larger quantity of urine than natural is secreted, containing an absolute and relative increase of urea" (Tanner). Specific gravity high ; and on that account Dr. Watson says it is apt to be mistaken for Diabetes Mellitus.

C. ANAZOTURIA. Excess of water, with an absolute and relative decrease of urea. Specific gravity low.

The case which I shall presently bring to your notice illustrates the species Hydruria. But first allow me to call your attention to a remarkable case of this disease recorded by Dr. Watson in his "Lectures on the Principles and Practice of Physic," vol. ii. p. 738; and with your permission I will here quote some of Dr. Watson's own remarks. "I have mentioned my hospital example because it afforded me a proof that liquid may be absorbed into the body from the atmosphere, either by the external skin, or by the pulmonary mucous membrane, or by both these surfaces. Dr. Prout, to whom I showed both the urine and the patient, advised that, for a time, his supply of drink should be limited. Accordingly, very much to the poor boy's sorrow, he was put upon an allowance of a pint and a half. I have no doubt that my injunctions were strictly observed, both by himself and by the nurses. Nevertheless, without losing flesh or weight, he passed during the corresponding twenty-four hours ten pints and a half of urine.

"I got evidence of the same fact in another way also: namely, by weighing the boy at short intervals; although the experiment was not repeated so often as I wish it had been. I give you the results of one of these trials.

"Immediately after he had emptied his bladder, he was found to weigh 3 st. 8 lb. 3 dr. Three hours subsequently, having taken nothing in the interim, he weighed 3 st. 9 lb. 2 dr. Then

he voided 16 oz. of urine, after which his weight was again 3 st. 8 lb. 3 dr.: so that he must have imbibed about a pound of liquid in that brief space of time.

"This boy lived more than two years afterwards, and continued to void an excessive quantity of pale, neutral urine, scarcely heavier than distilled water. After death, scrofulous tubercles were found in his brain and in his lungs. His kidneys were gorged with venous blood, but of healthy structure. There was nothing wrong, apparently, in his organs of digestion."

Perhaps some who identify Tuberculosis with Glanders, will conclude, from Dr. Watson's case, that Hydruria, as well as Azoturia, prognosticates that fell disease. But we should not conclude hastily, nor be led by our theories alone in such serious matters. "One swallow does not make a summer." There are several symptoms very common in Glanders, but they are far from being characteristic of the disease, or in any way "suspicious" of it. The reason why we know so little of the real nature of Glanders —why the symptoms of it are so often mistaken—is, I think, because it has been associated in our minds too much with other comparatively innocent diseases. We are so much afraid of the disease itself, that we often condemn others for being remotely like it. I know that army horses have been destroyed on mere "suspicion" of Glanders. In the year 1876, the Staff Veterinary Surgeon at an important station recommended a "lazaretto" to be built for four horses, where "suspicious" cases of Glanders might be kept apart from all other horses; but the "authorities" refused to sanction it, on the plea that it was better to destroy at once all cases with symptoms suspicious of Glanders, than to keep them under observation in a lazaretto!

Dr. Watson, in the lecture above quoted from, says: "For many years of my professional life I had not met with an instance of what has been termed *Diabetes Insipidus;* from which I infer the rarity of that disorder. I shall use the term *Chronic Diuresis* to express this affection."

Dr. Aitken, in his larger work on the "Science and Practice of Medicine," second edition, does not even mention this disease. As Tuberculosis is one of the most common diseases in England, we may therefore conclude that it has but a very

remote relationship, if any, to Diabetes Insipidus or Chronic Diuresis.

But I am told that Chronic Diuresis is rather a common disease among horses in this country: if so, those veterinary surgeons who are familiar with it ought to be able to tell us positively what value it has as a prognostic sign of Glanders; and those who learn by experience and observation ought to know, if they have had many such cases, which *form* of the disease is related to Glanders and which is not.

The case which I shall now call your attention to is negative in respect to Glanders: it is a case of *Hydruria*, and is of interest chiefly in respect to treatment.

Dec. 24, 1875.—No. 72, grey (draught) mare, aged 12, of No. 3 Compy., A. S. Corps. Came to this station from Dublin, with the company, on the 15th inst. She is in a very low condition, and looks unhealthy. On inquiry, I find that she has suffered from inordinate thirst, and frequent passing of large quantities of clear urine, with voracious appetite, eating all her bedding, etc., for at least three months past—that is, since the present driver has been in charge of her. There is further evidence to prove that she has been so, more or less, for a much longer time—probably for over two years, according to the farrier surgeon's recollection; but she has never been under any medical treatment for it. She worked well, and kept in a fair condition until about two months ago, when she was put to extra work; and then she began to waste away rapidly. She has been a bad crib-biter for a long time; I cannot find out how long. Pulse 40; respiration 9.

Let her be admitted to the infirmary stable for observation. Rest from all work; exercise for two hours daily—walking. Diet: oats, 12 lb., hay, 14 lb., daily,—that is, 2 lb. hay extra over the usual allowance to heavy draught horses, A. S. Corps.

Dec. 31.—The quantity of urine voided in twenty-four hours cannot be ascertained; but whenever she goes to the trough she drinks very freely, and in five or ten minutes afterwards she passes a large quantity of urine just as clear as the water she drank, and free from smell. Specific gravity 2. After standing twenty-four hours there is a slight deposit from the urine of

carbonate, phosphate, and the oxalate of lime,—the former most and the latter least in quantity. Bowels act well. She used to sweat profusely at work. The skin is "hide-bound," and feels thick and stiff; there is a peculiarly disagreeable smell from it after exercise. The eyes have a wretched, disheartened expression. She seldom lies down, but often falls down in her sleep. It cannot be traced to any direct cause, such as inferior diet. Prognosis very unfavourable, considering how long the disease has existed, and the present very low condition of the patient. I do not know of any medicine that might be given with confidence of success. Staff Veterinary Surgeon Gudgin has seen the case with me, and he says that he has known some very bad cases recover by drinking the saturated solution of yellow clay, though not so bad a case as this. He has great confidence in that remedy. Col. Fitzwygram also, in his "Horses and Stables," says that "clay mixed with the water given to drink sometimes acts most beneficially." He says, moreover, that if not relieved, it "often brings on such a deteriorated state of the system that Glanders supervenes."

Let the clay-water treatment be adopted. Mix a quantity of yellow clay with water; and after the insoluble part has been deposited, give the solution to the mare to drink—as often, and as much of it, as she likes.

A careful man has been told off to look after this patient only, from this date: he is to measure all she drinks during the twenty-four hours, and all she urinates between 6 a.m. and 6 p.m. daily. The walking exercise to be continued; to go out immediately after urinating. Extra diet, as above.

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1875.			
Dec. 31	3	11	Between 11 a.m. and 5 p.m.—*Bucket measures* 12 *Quarts*, WHEN FULL.
1876.			
Jan. 1	4½	21	From 6 a.m. to 6 p.m.—Mare weighed to-day: 9¼ cwt.
2	4	20	From 6 a.m. to 5 p.m.
3	6	28	From 6 a.m. to 6 p.m., on and after this date.
4	4	24	

Date.		Drink in Buckets.	Urine in Quarts.	Remarks.
1876.				
Jan.	5	5	25	
	6	5½	26	
	7	6	27	
	8	5½	27	
	9	4	24	
	10	4½	22	
	11	4	20	
	12	4	19	
	13	3	11	
	14	3	11	
	15	3	9	
	16	3	8	
	17	3	8½	Weighed 10 cwt. Looks more cheerful.
	18	2½	8	
	19	1½	5½	
	20	4	14	
	21	2	8	
	22	2½	8	
	23	2½	8	
	24	3½	8	
	25	3	8	
	26	2½	7	
	27	3	9	
	28	2½	7	
	29	2½	7	
	30	2½	6	
	31	3½	9	Weighed 10 cwt. 10 lb.
Feb.	1	3	9	
	2	3	7	
	3	1	5	Extensor muscles of the right arm swollen and very tender; lameness severe. Swelling does not "pit" on pressure. Cause not known. Feeds well. Pulse 36. Fæces hard. Give aloes ʒviij. in solution. Feed on bran-mashes. By some foolish mistake on the part of the farrier, the aloes solution was not administered as a draught, but mixed with a bucketful of clay-water for the patient to drink (!), and during the day she drank nearly the whole of it. She drank nothing else.
	4	3	7	
	5	3	8	
	6	2	7	
	7	2	6	The physic purged moderately. Free from lameness. Swelling nearly disappeared. Extra diet (oats 12 lb., hay 14 lb.) from this date (7th), and usual exercise.
	8	2½	8	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
Feb. 9	2	6	
10	2	6	
11	2½	6	
12	2½	7	Discontinue clay-water after to-day.
13	3	8	Common water. (*All the water we get at the Curragh is very hard.*)
14	2½	7	
15	2½	7	
16	4	24	
17	3½	18	
18	4	22	
19	3	18	
20	2½	17	Discontinue common water after this date.
21	3	12	Clay-water.
22	2½	10	
23	2½	7	Weighed 10 cwt. 1 qr.
24	2	7	
25	2	6	
26	2	6	
27	2	7	
28	2	7	
29	2½	7	
March 1	2	6	
2	2	5	
3	2	5	
4	1½	3	
5	2	4	
6	2	5	
7	2½	5	
8	2½	5	
9	2½	6	
10	2½	6	
11	2	4	
12	2	7	
13	2	4	
14	2	5	
15	1½	3	
16	1½	3	
17	2	4	
18	2	4	
19	1½	3	
20	1½	3	
21	2	4	
22	1½	3	
23	2	4	
24	2	4	
25	1½	3	
26	1½	3	
27	1½	3	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
March 28	2	4	
29	1½	3	
30	2	4	
31	2	4	
April 1	1½	3	
2	1½	3	
3	2	4	
4	1½	3	
5	1½	3	Weighed 10 cwt. 3 qr. 16 lb.
6	1½	3	
7	2	4	
8	2	4	
9	1½	3	
10	2	4	
11	2	4	
12	2	4	
13	2	4	
14	1½	3	
15	1½	3	
16	2	4	
17	1½	3	
18	2	4	
19	1½	3	
20	1½	3	
21	2	4	
22	1½	2	
23	2	4	
24	2	3	
25	2	3	
26	2	3	Discontinue clay-water after this date.
27	2	4	Common water.
28	2	3	
29	2	3	
30	2	3	
May 1	2	3	
2	1½	2	
3	3	3	
4	2	3	
5	2	3	
6	2	3	
7	2	3	Observe, that when the clay-water was discontinued on the 12th of February, the quantity of urine voided daily increased in four days from 7 to 24 quarts, while the water drunk increased only from 2½ to 4 buckets.
			Commence light duty to-morrow (8th). Continue drinking common water.
15	...	...	Weight, 11¼ cwt.

Date	Drink in Buckets.	Urine in Quarts.	Remarks.
1876.			
May 21	...	...	Discontinue work. Resume observations to-morrow.
22	3	6	Common water continued.
23	2½	4	
24	2½	4	
25	2½	4	
26	3	4	
27	3	4	
28	3	4	In order to see whether alum will have any restraining effect, give alum sulph. ʒss daily, dissolved in the first bucketful of common water every morning, from this date inclusive.
29	3	4	
30	3	4	
31	3	4	
June 1	2½	4	
2	4	7	
3	4	8	Give the alum ʒss twice daily, from this date inclusive.
4	3½	7	
5	5½	18	
6	5½	20	
7	5½	20	Discontinue the alum after this date.
8	5½	20	
9	3½	16	Discontinue common water after this date.
10	3½	16	Clay-water.
11	3½	16	
12	3½	16	
13	3½	8	
14	2½	8	
15	4	10	
16	3	9	
17	2½	7	
18	2½	8	
19	2½	6	
20	...	...	The attendant has been removed for other duties ; no other trustworthy man can be spared for such exclusive work. The mare is also required for duty. She is therefore discharged for heavy draught work. Diet ordinary, oats 12 lb., hay 12 lb., daily. To have clay-water always to drink.

Probably the observations, imperfect as they are, have been carried on long enough; though whatever value they have

depends entirely upon the length of time over which they have been extended, and that all the more because they are imperfect. They are imperfect, 1st, because I have no absolute proof that the quantities reported are correct: in fact, they are not better than fair approximations. The drink was given in buckets. When the man reported that the mare drank $3\frac{1}{2}$ bucketsful, that meant it was nearer, as far as he could judge, to $3\frac{1}{2}$ than to 3 or to 4. The urine was received into a "blood-can" graduated into quarts, and he reported to which line the urine stood nearest on the level. These are rough measurements for scientific requirements, but I always thought that if I imposed upon my assistants the task of exact measurements, I could not rely so well upon them. These observations would have been perfectly useless if they had been for a short period only; but considering the long time over which they have been carried on regularly, the errors above and below the quantities recorded correct each other to a great extent, if not entirely, so that we may accept these measurements as reliable approximations for practical deductions. 2nd. But a more serious imperfection arises from the circumstances which prevented any account being taken of the urine passed during the dark twelve hours—from 6 p.m. to 6 a.m. 3rd. The influence of the changes of weather upon the skin is another missing link required in exactly balancing the amount of water drunk and urine passed.

The solution of yellow clay seems to have had much influence for good in this case; but I do not know its mode of action. Is it simply in checking thirst? Is it by some soothing effect upon the digestive organs? Does it assist directly or indirectly the assimilation of food?

The solution of alum did harm: it increased the thirst from 3 buckets to $5\frac{1}{2}$, and the quantity of urine from 4 to 20 quarts —or, to put it in other words, the alum nearly doubled the thirst, and it multiplied the urine by five. These proportions are remarkable.

The patient has not yet (date of discharge) recovered from the disturbing influence of the alum; for when the alum was first given the measurements were—drink, 3 buckets, urine,

4 quarts; but now the proportions are—drink, 2½ buckets, urine, 6 quarts.

I shall now ask you to remember the condition and general symptoms of the mare when she was first admitted, and then observe the following remarks:—

1. Weight increased 2 cwt. (from 9¼ to 11¼ cwt.).

2. The skin now feels and looks healthy; she does not perspire abnormally at work, and there is no bad or disagreeable smell from the skin.

3. She is in good spirits—looks cheerful. She gradually left off falling down in her sleep; she lies down at night now regularly. I wonder why she was so unwilling to lie down when she was so weak. Was it because the liver or some other internal organ was congested and tender, causing pain when the body rested on the ground?

4. She gradually left off eating the litter.

5. But the most remarkable thing, perhaps, is, that she gradually left off the habit of crib-biting. She has not been observed to do it for several weeks past, though carefully watched.

6. The urine is of a normal colour, with normal deposits. Specific gravity ·25.

Addenda.

In order to see whether the mare continued well, she was taken into the Infirmary stables, and the observations resumed again on the 16th January, 1877. Since last report she has been at work constantly in heavy draught, and during the past two months she has been drinking common water. She has not been seen to crib-bite since the above report.

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1877.			
Jan. 16	3	10	Urine normal colour; sp. gr. ·12. Drinks common water.
17	2½	14	Weighed 11 cwt. 1 qr. 2 lb.
18	3	10	
19	2½	9	

Date.	Drink in Buckets.	Urine in Quarts.	Remarks.
1877.			
Jan. 20	2½	7	
21	3	10	
22	4	12	
23	3½	11	
24	3	12	Discontinue common water after this date.
25	2	8	Clay-water.
26	1½	5	
27	2	6	
28	1½	5	
29	2	6	Sp. gr. ·30.
30	2	6	
31	3	7	
Feb. 1	2	6	
2	2	6	
3	4	10	Sp. gr. ·35.
4	4	12	
5	...	...	Mare could not be spared longer from duty.

DEATH FROM RUPTURE OF THE RIGHT PELVI-CRURAL AND OTHER VENOUS TRUNKS.

BY W. A. TAYLOR, F.R.C.V.S., MANCHESTER.

ON July 13th a bay draught-horse was brought to the infirmary, supported on each side by a number of men, who had experienced the greatest difficulty in keeping the animal in an upright position. The horse was perspiring profusely; the perspiration literally teeming from the entire surface of his body. His breathing was greatly distressed; his gait reeling. He was assisted, as quickly as possible, to a loose-box, in which he immediately fell down and died.

I did not see the horse until half an hour after his death, when, from the history of the case and the blanched appearance of the visible mucous membranes, I unhesitatingly gave an opinion that he had died from internal hæmorrhage.

The history of the case is briefly this:—The horse was walking behind a lurry, to which he was tied, and behind him was another horse and lurry. The last-mentioned horse stumbled. His driver

struck him with a whip. The horse jumped forward, and one of the shafts entered the anus of the horse in front—thus, as it were, impaling him for the instant. The injured horse struggled to free himself, and fell; and on the shaft being withdrawn from the rectum, a large quantity of blood followed in a gush, very little external hæmorrhage afterwards taking place. That external hæmorrhage did not occur to any great extent, was undoubtedly owing to the action of the *sphincter ani*, which was subsequently discovered not to have been lacerated.

The *post-mortem* examination demonstrated that the shaft had passed in at the anus, taking an upward, oblique course to the right, and had penetrated (also obliquely) the rectum, about six inches from the anal opening. From this it passed beneath the ilium, the ventral surface of which it had considerably grazed, ultimately reaching as far as the right pelvi-crural venous trunk, in which vessel there was a distinct rupture an inch in length. Shreds only of the external and internal iliacs could be found; indeed, the vicinal structures were almost reduced to a pulp. The mucous membrane of the rectum, for a few inches from the anus, was lacerated; beyond this and the direct rupture, no injuries to the intestine were discernible. In the abdominal cavity was a great quantity of blood, in a semi-coagulated state. The viscera and vascular structures of the body were, of course, considerably blanched. There were no osseous lesions.

Probably the only interest attaching to this case, beyond its unusual occurrence, is the length of time—half an hour—the animal lived subsequently to the reception of the injury.

SUSPECTED CASE OF BLOOD-POISONING.

BY J. COOPER, JUN., M.R.C.V.S., BRIGHTON.

I HAVE forwarded the intestines and spleen of a five-year-old French gelding, and should feel extremely obliged if you would kindly give me your opinion of the morbid structures. The history of the case is shortly this:—I was called, in the absence of Mr. Knight, to see the animal two days ago, and found him presenting the symptoms of an ordinary attack of Bilious Fever.

I saw the horse again the next day, and found him much the same—the appetite tolerably good, and no urgent symptoms being present; however, at six o'clock this morning, a message was sent that the animal was very ill, and on Mr. Knight and myself proceeding to the box, we found him down, extremities deathly cold, visible mucous membranes pallid, feeble running-down pulse, and with all the indications of approaching collapse from internal hæmorrhage. In a quarter of an hour he died.

Post-mortem, two hours after death.—The abdominal cavity filled with blood; heart and lungs healthy, but very anæmic; liver normal; kidneys rather soft in consistence, and their capsules infiltrated with a gelatinous exudation. The spleen, intestines, and mesenteric glands presented the appearance shown in the parts forwarded. I am sorry to say that the knacker performed his duties in so rough a manner that, although internal hæmorrhage was evidently the *immediate* cause of death, I was quite unable to detect the seat of the ruptured vessel. I can therefore only surmise that it must have been a large vessel near the heart, from the quantity of blood lost and the anæmic condition of the pulmonary organs.

I must apologise for the meagreness of this description.

[Professor Duguid furnishes the following report of the parts forwarded by Mr. Cooper:—The spleen referred to in Mr. Cooper's letter was very large and soft, in addition to which there were numerous hæmorrhagic spots on the surface. The mesenteric glands were much enlarged, and their tissue so much broken up and infiltrated with blood that they appeared like soft blood-clots—some of them being equal in size to a goose's egg; the chain of glands along the course of the bloodvessels on the cæcum and colon were in the same condition, giving the appearance of an elongated blood-clot under the peritoneum. The intestines were tolerably healthy, there being only one hæmorrhagic mass, of the size of a hen's egg, in the tissue of the mucous membrane of the colon. I am inclined to think that the blood found in the abdomen was transuded from the vessels without any actual rupture, and that the case was one of blood-poisoning. A more careful description of the case might throw some light on it.—Ed. *V. J.*]

RUPTURE OF THE STOMACH, WITH AN ACCUMULATION OF SAND IN THE COLON OF A HORSE.

BY CAPTAIN RUSSELL, M.R.C.V.S., GRANTHAM.

On Thursday, the 26th July, a very valuable roan hunter, the property of Drake Turner, Esq., Little Ponton Hall, near this town, was observed by the groom to be purging violently. Not being able to account for the cause, he gave him a cordial ball and changed his food, and in a few hours the purging ceased. On going to his box on Friday morning, he, however, found the horse trembling all over, and with a very sore throat. He therefore requested my attendance. On my arrival I found him as the groom had described—shaking, very feverish, and slavering from his mouth. On slightly pinching the larynx a violent fit of coughing was induced. Having dressed his throat with vesicant, and administered a stimulant, I ordered the man to give him another stimulating ball in four hours, and said I would see him again in the afternoon. At four p.m. I visited him, when I found he had had two or three slight attacks of abdominal pain during the day, but they were not acute; he passed fæces of good colour and consistence plentifully, but his urine was high-coloured and scanty. He had fed at intervals. An anodyne drink was given, and embrocation was applied to the abdomen. A drink was left with the groom, with instructions not to leave the horse, and should the pain return, to give him the medicine and send for me at once. About eleven p.m. the symptoms suddenly increased in severity, and I was sent for without delay.

I found him in great pain, as was evinced by constantly lashing out, first with one hind-leg, then with the other; stretching out all four legs, and crouching the body until the abdomen almost touched the ground, lying down, rolling, etc., etc., with the usual symptoms of acute Enteritis. I will not detail the treatment pursued; suffice it to say that, notwithstanding every effort, he continued to become worse up to Sunday morning, the 29th, when symptoms of approaching dissolution set in. Finding our efforts of no avail, he was destroyed, when the *post-mortem* examination revealed an extensive laceration of the external coats

of the stomach, with a small perforation in the mucous lining, through which a quantity of fluid matter had escaped into the abdominal cavity. The anterior portion of the colon, for about three feet in extent, contained about half a bushel of sand; the feculent matter having to pass along a channel upon the upper surface of the sand. There was acute inflammation of the colon and cæcum.

Throughout the duration of the case there were no symptoms of vomiting or retching; fæces were passed in good quantities up to the last few hours. The prominent symptoms were—stretching and crouching, constant violent kicking with hind-legs, savage pawing, biting at the bandages and clothing; and at intervals the animal kept persistently walking round the box. If kept on the move in the yard, he would walk for an hour without any symptom of pain whatever, but directly he stopped it came on with all its severity.

All the hunters at this establishment are bedded on sand and sawdust during the summer months. The green food allowed had lately been discontinued, and hard food substituted, preparatory to taking the horses up for condition. How the sand became accumulated in the colon is an interesting question to solve. It must either have been taken purposely, as the result of a morbid appetite, produced through indigestion; or the animal may have had the habit of upsetting a portion of his corn from the manger, and then, after finishing his feed, of searching for that which had been spilt among the sand. He had never been observed to do the latter, but the groom on several occasions had noticed him with his head down, as if blowing the lighter sawdust from the heavier sand. I give preference to this view, and look upon the case as one of morbid appetite, the result of chronic indigestion, induced by a long period of rest in a loose box after a severe winter's work in the hunting field. I send this hurried account for publication, should it be deemed worthy.

[An accumulation of sand in the large intestines of the horse is not at all an infrequent occurrence among troop horses, which are often picketed on loose sandy soils.

A depraved appetite may lead to the ingestion of the sand;

but we may surmise that in the majority of instances it is accidentally swallowed with the oats which have escaped from the nose-bag during feeding time and are picked up afterwards by the horse from among the sand. We have observed that, for some days after return to stables, troop horses which have been engaged at manœuvres in sandy districts pass much fine sand in their fæces. It has been our misfortune to lose horses from the peculiar form of Enteritis which this sand ingestion induces, —immense quantities of this matter being found in the large intestines. "Sand Colic" is not at all uncommon among troop horses, and is well known to German army veterinary surgeons, one of whom, Peters, has recently published an excellent paper on the subject in one of the German journals.—ED. *V. J.*]

THE ANATOMY AND PHYSIOLOGY OF THE KERATOGENOUS MEMBRANE OF THE HORSE'S FOOT.

BY DR. MOELLER.

(Continued from page 120.)

NOT unfrequently smaller vessels are to be seen, which take a course transversely to that of the laminæ. The capillaries are disposed on a very fine "*rete*" under the surface of the lamina. Each lamina is provided with smaller laminæ—secondary laminæ (*Secundär Blättchen*)—or as Fleming, who was the first to describe them, in 1858, calls them, "laminellæ," which take a course parallel to the primary laminæ, and in most places—viz., on the inferior portion of the wall—stand at an acute, and towards the free edges of the primary laminæ, at an obtuse angle to the same. The secondary laminæ are simply continuations of the tissue of the primary laminæ. The fibres of connective tissue radiate from the primary into the secondary laminæ. The average number of secondary laminæ upon each primary one may be reckoned as from 110 to 120. Subdivisions of the primary and secondary laminæ are frequently to be observed.

I would designate this superficial stratum of the podophyllous tissue, which corresponds to the "corpus papillaræ" of the cutis, the *Stratum phyllodes.* (Fig. 7, *d*, p. 119.)

The entire surface of the secondary laminæ is covered by a

Stratum mucosum (*Rete Malphigii*). Lying immediately upon the surface of this portion of the cutis are to be seen, closely pressed one against the other, cylinder cells, which are provided with a faintly granulated refracting protoplasm, and a large oval nucleus. The cells are about 0·016 m.m. in length, and 0·0045 m.m. in width. These cells offer exactly the same characteristics as those of the *Rete*—viz., they are very easily coloured by tinctures.

In many places, the cells belonging to the different secondary laminæ are in intimate relation with each other; this is especially the case in the superior portion of the wall; in others, on the contrary, are to be seen one or more layers of rete-cells, one upon the other. These cells, which are situated upon the outside of the cylinder cells, appear to be round when seen in a transverse section of the laminæ; they form, however, more or less extended spindles, which are placed in a diagonal manner towards the direction of the laminæ. Towards the inferior margin of the wall they increase in number. In the inferior third of the wall are to be observed, as a general rule, layers of cells which have originated from the "hornification" of the spindle-formed rete-cells; and each layer of these cells is situated between two layers of the secondary laminæ, or laminellæ, of the podophyllous tissue. These strata form the secondary horny laminæ.

For the better comprehension of this subject, the following should be noticed:—As is well known, the fleshy laminæ unite in the most intimate manner with the horny laminæ of the hoof, so as to join as a combined whole, and by a most intimate and firm connection, the *os pedis* and the hoof. This intimate union is essentially favoured by the subdivision of the primary fleshy laminæ into secondary, or laminellæ. Between these secondary laminæ—that is, upon their surface—are to be found the above-mentioned strata of rete-cells, which are to be looked upon as secondary laminæ of the primary horny laminæ or keraphyllous tissue. Those secondary horn laminæ which are situated in the superior portion of the horn wall, are composed exclusively of rete-cells, which are very rich in protoplasm, and which, by the continual pushing of the horny wall downwards (growth), are in part transformed into horn; while on the surface of the cutis

new cells are formed. The oldest of these cells—that is, those which are to be found in intimate relation with two secondary vascular laminæ, being enclosed between them—also undergo this hornification. So that we are only justified in speaking of secondary horn laminæ in this locality.

Upon the inferior margin of the podophyllous tissue, where the wall unites with the horny sole, the rete-cells undergo this hornification process *in toto*, and contribute to the formation of the "white line."

B. *The Fleshy Sole*.—That portion of the velvety tissue corresponding to the sole.

This portion of the keratogenous membrane does not offer any very marked variations, in its anatomical structure, from that proper to the wall. The chief point of difference lies in the circumstance, that on the sole we have finger-like papillæ on the surface instead of the laminæ proceeding from the wall. In a transverse section of the sole, we observe the same strata as we have previously described in speaking of the podophyllous tissue. As is known, the deepest layer of the fleshy sole lies at the anterior and lateral portion of the *os pedis*, and possesses also a *Stratum periostale*. Upon the inferior or heel portions of the sole, where the foundation thereof is formed by the cartilages, the deepest layer of the fleshy sole acquires the character of a subcutis, of which we shall treat more fully hereafter.

The *Stratum periostale* is very much less completely developed here than in the podophyllous tissue. Its arrangement also varies. While the fibres of connective and elastic tissue are closely packed together, and take a course towards the wall, or outwards, on the sole their course is in the general direction of the inferior surface of the *os pedis*. It is also far less dense than in the podophyllous tissue, though the cellular character is here, as there, very subordinate. Chondroblasts are only present in insignificant numbers.

The *Stratum vasculosum* is still more deserving of its name here than on the wall—the tissues of the fleshy sole being penetrated by great numbers of vessels of considerable size, which run in all directions. The vessels, especially the larger, are notably present in the vicinity of the circumference of the sole. Micro-

scopically are to be seen large clefts, which especially form the veins, and which in their course unite with the artery and vein of the inferior margin of the *os pedis*. Otherwise the fleshy sole offers no histological differences of importance from the fleshy wall or podophyllous tissue. Coarse fasciculi, formed of dense strong fibres of connective and elastic tissue, cross each other in every direction. That portion of the fleshy sole which comes into relation with the horny sole, and which corresponds to the *Stratum phyllodes* of the fleshy wall, bears on its surface papillæ, as has been already mentioned. These may be looked upon as analogous to the *Corpus papillare* or *Stratum papillare* of the true cutis. The tissue which composes the basis of the sole is, however, exactly the same as that of the wall. The papillæ, as well as the superficial layer of the fleshy sole, consist of a more loose and cellular connective tissue than the deeper portion. This stratum is also very rich in elastic fibres. This portion of the fleshy sole is the seat of the finer ramifications of the venous and arterial capillaries. As a rule, one can observe in each papilla an artery and two veins, which penetrate to the apex of the same; and frequently the latter vessels have a very irregular course. Upon the surface of the fleshy sole is to be found a very rich layer of rete-cells, and a great number of strata of superposed large cells. These rete-cells are always dark-coloured, from a pigment deposit in their protoplasma.

The greater strength of the *Stratum mucosum* is dependent upon the slowness with which the process of transformation into horn cells takes place. This process goes on very gradually, so that a great number of non-hornified cells are always present. From this it is apparent that the transition from the rete tissue into that of the horny sole must be very gradual—a circumstance which essentially contributes to the protection of the fleshy sole from contusions and other injuries to which it is daily exposed.

C. The Fleshy Frog (*Fleischstrahl*), that portion of the velvety tissue or keratogenous membrane covering the pyramidal body-cushions.

This in its composition more closely resembles the cutis proper. The *Strahlpolster*, or pyramidal body, forms a modified subcutis, which is covered by the fleshy frog or velvety

tissue. Although the limits between the pyramidal body and the velvety tissue are rather sharply defined, still there exists between them a very close relationship; as the fibres of connective and elastic tissue of both organs penetrate mutually into the substance of each. Strong fibres of elastic and connective tissue pass from the pyramidal body (including the cushions) into the fleshy frog, in order to become cuticular tissue—a condition which also corresponds to the structure of the true cutis. The *Stratum periostale* is evidently absent, because the fleshy frog comes in no part of its extent in relation with the *os pedis*. The greater part of the fleshy frog is formed by a network of connective tissue, interlaced by many elastic fibres, which cross the organ in every direction; but which, however, take an average course corresponding to the horizontal direction thereof. The meshes of this network are proportionately small in comparison to the size of the single bundles; it is at the same time a dense narrow network of coarse tissue. The meshes of this network are partly filled with bloodvessels, and partly with reticular connective tissue. The remaining strata offer no noteworthy variations from those of the fleshy sole or velvety tissue of the sole, and may therefore be described in the same manner.

(*To be continued.*)

MALIGNANT OVARIAN DISEASE.

BY J. B. WOLSTENHOLME, M.R.C.V.S., MANCHESTER.

[Mr. Wolstenholme forwarded for inspection an ovarian tumour, with a brief description of the symptoms presented by the animal from which it was obtained. As the case appeared to be unusually interesting, we requested him to forward a more detailed description, and this he has most obligingly furnished in the following history.]

COMPLYING with your desire, I append a more detailed account of the case connected with the mesenteric glands and portion of ovary which I forwarded for your inspection.

April 21st, 1877. Patient, a bay cart-mare, of the lighter class; about fifteen years old; has had a foal; has been very healthy until within about a month ago, when her appetite

became capricious and impaired, and when, although well nursed, she gradually lost condition and strength.

This morning severe rigour followed exposure. I was sent for, and found the animal rather better. The extremities were warm; the surface of the body fairly warm beneath the rug; *sweating* in submaxillary space, beneath the mane, down the trachea, and in front of the breast,—this symptom had been noticed for some time previously; pulse 66, very weak; eyes very full, and peculiarly bright and clear; mucous membranes rather pallid; off food; no cough; is casting coat; not tympanitic, but abdomen is abnormally full and round inferiorly; respiration normal; gave a diffusible stimulant, etc. At night much better. Continue nursing, etc.; lively; eating a little.

24th. Examined chest: heart and respiratory sounds normal. On compressing larynx, a short, very hollow cough is elicited.

26th. Pulse 60, weak; pain on pressure over intro-anterior part of right chest; with dulness on percussion, and indistinct respiratory murmur on auscultation.

27th. Pulse 66, weak; respiration 24, deep; the sweating about neck continues; general surface of body chilly; pain on pressure over lower part of chest on both sides; on the right side are patches of surface about the size of one's hand, which are distinctly hotter than surrounding portions; auscultation: left side, respiratory murmur heard only over upper two-thirds of chest; percussion, sonorous upper two-thirds, dull below;—right side, as left side, with dull area occupying lower half of chest. Slight œdema about umbilicus.

29th. Pulse 66, weak; respiration 20, deep; expiration fully half as long again as inspiration. Œdema more marked. Examined urine for albumen,—none present.

May 1st. Continues much the same; breathing as badly "broken-winded"; lively; eats a little; has not laid down during illness; evacuations normal; is very low in condition.

4th. Pulse 72, weak; mucous membranes slightly injected; mucous discharge from nostrils; lower eyelids œdematous; purulent incrustation around each inner canthus; a little pus in each eye; lachrymation; still lively; eats fairly to-day.

6th. Pulse 75, weaker; respiration slow and deep; mucous membranes tinged with a dirty yellow colour; a little discharge

of mucus from vagina points to œstrum. Appetite worse; dependent œdema increasing.

7th. Pulse 84, weaker; greater purulent collection around inner canthi; *coughs* a little; gradually sinking.

8th. As yesterday; slight epistasis; respiration 12.

9th. Pulse 100, small and weak; respiration 12; increased œdema beneath abdomen and breast, none of legs; regurgitation into jugular veins; marked fulness of intercostal spaces corresponding to dull area; sweating about the neck continues.

12th. Much the same; more epistasis.

13th. Much worse; pulse 90, soft and weak; respiration 32, and very laboured; breath fœtid; is now "pot-bellied" in the extreme; no œdema of legs; internal temperature 103·2° F.

14th, a.m. Pulse 84, small and very weak; breath very fœtid; there is a dirty sanious discharge from both nostrils, which also encrusts around alæ. 3 p.m. Pulse 84, the smallest possible thrill beneath finger; respiration 46, very laboured; internal temperature 101° F. Died about 5 p.m.

The treatment has been of the conservative and supporting character: potassæ iodide, in 3j doses, was used to combat the effusion; vigorous wisping and gentle stimulation of breast and chest were employed to promote the action of skin; but at the outset, so great was the want of vis, and so little the response to treatment, that at an early period in the case I felt justified in informing the owner there was very little hope of recovery.

15th. *Post-mortem.* The subject extremely emaciated; on opening abdominal cavity, a large quantity (at least fifteen gallons) of reddish-yellow serum escaped; peritoneal lining was red and greenish-black in colour, rough, and studded with small quantities of organised lymph; particularly was this the case on the stomach.

Small intestines pale, glistening, and in places semi-transparent.

Mesenteric glands much indurated, with depressed centres and contracted circumferences, much resembling cicatrices, and causing the surrounding mesentery to be puckered; many had a rete of fine threads of organised lymph attached to them; on section they cut as fibro-cartilage, cut surface pale and glistening, with a fibrous arrangement at centre.

Ovaries much enlarged: the one weighed 2 lb. 3 oz. (barely), the other was similar; the inclosing venous plexus was full of blood; several large Graffian vesicles immediately beneath the peritoneum; fimbriated extremity of the Fallopian tube very vascular,—on section very much resembling that of mesenteric glands; no Graffian vesicles in stroma.

Thorax contained several gallons reddish-yellow serum, lungs *not* adherent; pleura costalis generally red, thickened and rough; patches varying from one to several square inches were pale yellow in colour, felt like cartilage beneath the knife, cut surface pale and glistening; pleura pulmonalis not much affected; diffused sphacelus in centre of lungs; a number of indurated bodies, about the size and shape of "tick" beans, and much resembling the mesenteric glands, were scattered through the parenchyma. Heart rather flabby; liver with venous congestion; other organs healthy.

If you consider the case sufficiently interesting for insertion in the *Journal*, you are perfectly at liberty to do so.

[Professor Duguid examined the morbid specimen, and furnishes the following comments:—The ovarian tumour sent by Mr. Wolstenholme was a remarkably good specimen of a primary malignant growth. On the surface it showed a somewhat convoluted appearance; and being almost of the same colour as the grey matter of the brain, it bore a striking resemblance to that organ. In consistency it was dense and hard, cutting more like tendon than other tissue of the body.

On microscopic examination it proved a well marked case of schirrous cancer, the cells enveloped in the dense fibrous stroma being of the epithelial type, and showing all the appearances of active cell growth.

Mr. Wolstenholme's notes of the *post-mortem* appearances show clearly that the ovaries had been primarily affected, and that previous to death the whole body had become more or less invaded, as shown by the enlarged and indurated condition of the mesenteric glands, the presence of nodules in the lungs, and the condition of the serous membranes. It is seldom we meet with a case in which the sequence of pathological changes can be so readily traced; and Mr. Wolstenholme's paper is an interesting and valuable contribution to comparative pathology.]

Editorial.

THE PREVENTION AND SUPPRESSION OF CONTAGIOUS DISEASES IN ANIMALS.

About six months ago England was invaded by the Cattle Plague, and though the invasion might have been prevented, or at least quickly suppressed, the contagion escaped, and until quite recently was active, and may even now exist, in and around London; causing great alarm, most vexatious inconvenience, and directly, as well as indirectly, heavy loss to individuals, no less than to the entire community. Why the contagion was allowed to wander abroad and to produce such serious results, we need not inquire; the reasons are familiar to those who have given any attention to the history of contagious diseases in this country during the last forty years, who know how they are spread and maintained, and what measures should be—but have not been, and are not now—adopted for their prevention or suppression. Suffice it to say, that the disease was introduced in such an open manner, its contagious principle was allowed to be so readily diffused, and the steps taken to arrest this diffusion were for some time so tardy and futile, that the agricultural community, who, for many years, have suffered so severely and so needlessly from scourges of this class, were naturally inspired by well-founded apprehensions of serious injury; and the Government, yielding to their urgent solicitations, at last granted a Parliamentary Committee to inquire into this malady in particular, and Foot-and-mouth Disease and Pleuro-pneumonia incidentally. The Committee sat for some time, and examined a number of people who were more or less conversant with these maladies, and with the traffic in ruminant animals. Very few members of the profession were called upon to give evidence—the number being extremely limited, for some reason or other; the past and present professional advisers of the Veterinary Department of the Privy Council, Professors Gamgee and Müller (of Berlin), and one or two other veterinary surgeons, being the only witnesses who might be said to represent the profession on this occasion. We need not refer to the composition of the Committee, several of whom appear to have had no idea whatever of these maladies, as evidenced by their questions and remarks, and the reasons for whose election it is difficult to understand; nor need we allude to the opinions given by the veterinary witnesses, except to note how readily we may account for the terrible losses this country has sustained, and now sustains, by a perusal of the statements made by the ex-adviser of the Privy Council and his successor. From their testimony, it would almost appear that the principal function of the Veterinary Department is to apologise for the existence of these pestilences; to throw blame on local authorities and agriculturists for their prevalence and destructiveness, instead of protecting the latter and the public; to be sceptical or throw discredit on all knowledge except what they themselves possess; and to allow matters to go just as they may. Notwithstanding the ravages which two of these diseases inflict upon the country every year, and

the utter inadequacy or impotency of the measures proposed for their suppression, one of these two witnesses expressed himself as quite satisfied with the state of affairs; while the other—from whom many important confessions were eventually wrung by questions and cross-questions—was finally obliged to admit that, with regard to the last outbreak of Cattle Plague, the sanitary measures were simply disgraceful! The disgracefulness of the present sanitary system was surely known to the Veterinary Department long before last July; if it was not, then it possesses less knowledge of the real condition of affairs than the majority of veterinary practitioners who have had any experience of our method of dealing with contagious diseases. That the latter surmise is not far from the truth, is proved by the fact that every prediction made by the Veterinary Department with regard to the suppression of this outbreak of Cattle Plague has been falsified by the course of events.

The Parliamentary Committee, or rather a majority of it, has done the best it could, perhaps, under the circumstances, as will be seen from the report of its conclusions which we publish elsewhere. At the most, many of its recommendations are but a compromise, and the most important of the measures proposed have been strongly insisted upon by ourselves for years. There can be no doubt whatever, that these proposals mark a considerable advance in an appreciation of the nature and destructiveness of the three maladies which were considered by the Committee, and that if they are adopted the country will to some extent be guaranteed against the importation of disease. But it must be remembered that slaughter at the ports of debarkation is not an absolute safeguard, as the outbreak of Cattle Plague in March most strikingly proves; and though we may prohibit the importation of cattle from countries which suffer from this disease, yet that there are other formidable scourges, the contagium of which is as subtle and potent, and as readily conveyed mediately or immediately. We hold to the opinion that the importation of living animals as food is neither humane, economical, nor safe, and that the interests of the public, no less than those of farmers, demand that a dead meat trade should be substituted for it as much as possible. Science and common sense support such an opinion, and the substitution will doubtless be effected in time.

With regard to the extinction of the contagious maladies recognised by the Committee as already existing in the country, we must assert that the measures proposed will not lead to that desirable consummation. Unless other measures are adopted and rigidly enforced, we shall never be free from the presence of these scourges. That they can be extinguished, there is no reason whatever to doubt; but that this will be attained by the Committee's proposals, or achieved by the organisation now existing, is impossible.

Our attempts hitherto for the suppression of Foot-and-mouth Disease and Contagious Pleuro-pneumonia have been harassing, most expensive, and utterly useless; and so they will continue until a thorough organisation is established. What is required most urgently in this direction is a Minister of Agriculture, with a State Veterinary Sanitary

Board to advise him, and afford him information with regard to these and other contagious diseases. The present state of affairs is intolerable. The Veterinary Department of the Privy Council only takes cognisance of four or five out of nearly a score of maladies which cause great injury and loss to the nation, diminish the food supply, and (some of them) are positively dangerous to mankind. Not only this, but it appears unable to adopt the initiative in any case, and only moves when much damage has been done, and long after its intervention might have been most useful. It never anticipates events, but waits until they have developed themselves, and then proceeds in its own fashion to control them.

The Lord President, with all his ability, energy, and zeal, is too much engaged with his other multifarious and highly important duties, to make himself acquainted with all the details pertaining to veterinary sanitary science; so that his views are nearly, if not altogether, based on what he is told by the veterinary adviser of the Council. The latter may or may not be the right man in the right place; but even if he possessed such knowledge as entitled his advice to the utmost degree of reliability, it is far too much to impose such enormous responsibility upon any individual, as that of the welfare of our animal wealth, and, to some extent, of the public health. Traditions are always likely to obtain great sway in these departments; and we find notions with regard to contagious diseases of animals still prevailing here which, though they might satisfy the medical science of many years ago, are now well-nigh obsolete. True, the "something-in-the-air" hypothesis has disappeared, and there is an indication that experience, dearly purchased at the expense of the public, is throwing a little light into dark places; but we have only to read the evidence given before the Committee to find that the old Adam still exists. Since the Veterinary Department of the Privy Council was established, and since a special veterinary adviser was appointed, the contagious diseases of animals have steadily increased in prevalence and virulency. Glanders, Rabies, Foot-and-mouth Disease, Splenic Fever, Tuberculosis, the so-called "Typhoid" of pigs, parasitic diseases of various kinds—transmissible to animals or mankind, and other affections of this kind, are becoming more common and destructive; while the sale of flesh of diseased animals is, we have reason to fear, more extensively carried on than ever it has been.

The fact is, that our veterinary sanitary organisation, expensive though it is, is a long way behind the age, and has never done anything to merit its being allowed to exist for a day. We are not sure if it does not occasion far more harm than it can effect good; and had the Committee been further empowered to inquire into what it has done, or what it is capable of doing, to estimate the amount of disease now prevailing with what existed before this Department was instituted, and to offer suggestions founded on this evidence, we are confident that a great public service would have been accomplished, and that Britain instead of being one of the most severely plague-scourged countries

perhaps in the whole world, would soon have offered a very different spectacle. As it is, so powerful is this Department in its obstructiveness, that we have but little hope indeed that the useful, though almost half measures proposed by the Committee, will be wholly, or even to any considerable degree, allowed to become law.

THE TRANSMISSIBILITY OF TUBERCULOSIS.

In an almost exhaustive, and certainly a very interesting paper, on the subject of Tuberculosis in Cattle (known in Germany as *Meerlinsigkeit*, *Hirsesucht*, *Monatsreiterei*, *Stiersucht*, *Perlsuchi*, etc.), Gerlach, Director of the Berlin Veterinary School (*Archiv für Wissenschaftliche und Practische Thierheilkunde*, Band i., Heft 1), applies himself to a solution of the question as to whether the flesh of animals affected with this malady will or will not communicate tubercular disease to the people who consume it. Two hundred years ago, this flesh was forbidden to be sold as food, and it was only towards the end of the last century that permission was given to vend it. Gerlach gives an excellent, though brief, historical sketch of the affection, and refers particularly to its receiving the name of *Franzosenkrankheit*, or "French disease," from the belief that it was syphilitic in its nature; hence the reason for proscribing the flesh of cattle suffering from it. Heim, a physician in Spandau, was the first, in 1782, to show that it was different from Syphilis. Two years later, Granmann proved that it was not Syphilis; while in Prussia in 1785, and in Austria in 1788, the restrictions on the sale of the flesh were removed, and towards the end of the century it was allowed for consumption everywhere; though in some countries, as Norway, an antipathy to its use continued for a long time after that period.* Various opinions as to the nature of the disease were then entertained: by some it was considered to be tubercular, by others sarcomatous, and by others, again, a new formation *sui generis*. For more than twenty years Gerlach has viewed it, from an anatomo-pathological point, as essentially tubercular; and his clinical observations have been founded on its identity with the Tuberculosis of the human species, as is evidenced in his "Handbuch der gerichtlichen Thierheilkunde," published in 1862. Not only this, but long before other experimenters he had produced the disease experimentally, by inoculation, in a number of animals of different species, and satisfied himself that it was really tuberculous, when other investigators had concluded that it was only an "absorption" disease. His first most important experiments with the milk and flesh of diseased cattle were made at the Hanover Veterinary School, between the years 1866 and 1869, and the results were published in the Annual Report of that school for the latter year. Then followed the experiments of Chauveau, Klebs, and others; but to the learned director of the Berlin school must be ascribed the merit of discovering the transmissibility or propagatibility of the disease through the digestive organs. The vast importance of the subject, from a sanitary and agricultural point of view, induced him to devote all his energies to a solution of the question with which he heads his paper—the first in the first number of the journal which he so ably edits, and which is a veterinary publication of the highest scientific order. His experiments are given in detail, and are remarkable not only for their diversity, the large number of animals of different species experimented upon, the care and skill with which they were devised and carried out, but also for their very convincing results.

* We cannot discover that the use of the flesh of tuberculous animals has ever been prohibited in this country, or even suspected of being dangerous.

These experiments were instituted, as we have said, to settle the question as to whether our own species incurs any risk in utilising the flesh and milk of cattle or other animals affected with Tuberculosis. They were, therefore, carried out entirely through the medium of the digestive organs—which would, of course, be the mode of access of the viruliferous agent, if present. The number of animals experimented upon were no fewer than one hundred and ten, and consisted of—

6 Calves,	31 Pigs (young),	8 Dogs,
4 Sheep,	1 Guineapig,	1 Horse,
3 Goats,	54 Rabbits,	2 Pigeons.

These creatures were all in perfect health, and many of them belonged to species which are rarely the subjects of naturally developed Tuberculosis.

They were fed with (1) masses of *raw tubercle* from diseased cattle, consisting of raw *fibrous tubercles* (*Knoten*) from the pleura, and diverse *raw tubercle* masses, (2) with raw *tubercles* from other animals and man, (3) with raw *flesh* from tuberculous cattle and other animals, and (4) with cooked masses of tubercle. We regret extremely that we cannot afford space to notice the experiments in detail, as they are of the greatest possible interest to the comparative pathologist and sanitarian. We have alluded to them briefly, and in so far as they had then been carried out, in a paper published in 1874,* and also in our work on "Veterinary Sanitary Science and Police," published in 1875 (vol. ii., p. 387); and we will now give the conclusions Gerlach has arrived at, as the result of his most praiseworthy and valuable task. We may note that every care appears to have been taken to guard against errors, and to select only trustworthy subjects for experiment. The rabbits were found to be perfectly healthy,—they had been reared in the Veterinary School; and others of the same family used for other experiments were, when killed for examination, discovered to be free from every trace of tubercle. The pigs were of the native breed, and the immunity of the porcine tribe from Tuberculosis was ascertained by frequent visits to the public slaughterhouse, this morbid condition being very rarely observed. It was different with the finer breeds of English pigs, which Gerlach designates as a "tuberculous family." The material for feeding was furnished by Department Veterinary Surgeon Dr. Pauli, as well as obtained by Gerlach himself from the slaughterhouse; Professor Schütz, of the Berlin School, made the autopsies; the experiments were conducted by Gerlach personally. The conclusions are as follows:—

1. There is a specific virulent material in tubercular matter,—the presence of a Tubercle virus is evident. The disease is produced through the digestive canal, by tubercular matter.

2. The fibrous tubercles from the serous membranes contain this virus.

3. The virus is present in fresh, but not in decomposed matter—in the fibrous and cellular tubercle, in the crude as well as the broken-up cheesy masses; though it exists in its greatest intensity in the latter,—a small quantity producing the largest amount of tuberculisation.

4. Infection of the alimentary tract commences in the mucous membrane of the mouth; if the tubercular matter has been left sufficiently long in contact with this membrane, there may be general infection of the entire lymphatic system. This membrane shows an aptitude for infection, from the mouth to the cæcum.

5. The tubercle of other animals and man is more or less virulent.

6. The fibrous tubercle of horses, destitute of cheesy matter, is as infectious

* "The Transmissibility of Tuberculosis."—*British and Foreign Medico-Chirurgical Review*, October, 1874.

as the tubercle of cattle ; though real Tuberculosis is rare in this animal, and it is very difficult to obtain fibrous tubercle which is not present in Glanders ; the miliary tubercle of that disease is not proper tubercle. Glanders is not, therefore, Tuberculosis.

7. The Tuberculosis of *birds*, and especially of the *common fowl*, is very virulent, and identical with the Tuberculosis of mammals,—a most important conclusion, from a sanitary point of view.

8. The *flesh* of a tuberculous cow is also infectious, though not nearly so much so as tubercle itself. It requires a much larger quantity of flesh to produce infection than of miliary or cheesy tubercle.

9. Tuberculous matter, boiled from a quarter to half an hour, is still infectious ; though to a much less degree than when uncooked. The period of boiling required to render it inert depends upon the thickness and density of the mass : in this respect it resembles trichinosed flesh.

Gerlach directs particular attention to the practical fact to be drawn from his experiments—that *the flesh of tuberculous animals of every kind, and particularly that of tuberculous cattle, should not be consumed by mankind as food.* The great danger from its use as an article of diet is indicated by the fact, that the flesh of two of the animals in which the disease commonly appears—cattle and swine—is eaten raw, or half-raw, in North Germany. The relations between Scrofula and Tuberculosis in mankind, and animal Tuberculosis, particularly that of cattle, if elucidated by statistics, might afford us grave matter for consideration. Zürn tells us that the affection prevails among cattle to a very considerable extent in Jena and its neighbourhood ; and he believes that one-sixth or one-fifth of all the cattle there are suffering from Tuberculosis. He also mentions that the statistics of the Anatomico-pathological Institute of Jena, show that about 20 per cent. of the people whose bodies are dissected are affected with Tuberculosis.

In the tubercle alone is the virus *always* present. Gerlach has employed the youngest and most undeveloped masses (*Knotchen*), and produced Tuberculosis as certainly by administering them by the mouth as by inoculation. But it also exists in other parts of the body—as in the soft formations, in the flesh, etc. It is proved by direct experiment, and otherwise, that the process at the commencement is always local, and often very limited ; its extension occurring through gradual infection, which is often so very slow that the disease assumes a chronic form, and remains in this condition so long as it is not complicated with the acute form. Consequently, there is a stage at the commencement of Tuberculosis, in which the flesh may yet be considered innocuous. But an important sanitary question arises as to the period when the flesh begins to be dangerous. At first sight, one would conclude that its use should be forbidden only when the tuberculous cachexia is discernible ; but Consumption, from Tuberculosis in animals, always follows when organs which are not very important begin to be the seat of tuberculisation ; so that long before the cachexia is apparent, the disease has become general. This indication cannot, therefore, be accepted as a safe guide in giving an opinion as to the rejection of such flesh ; and some other practical *criteria* must be at hand to assist in arriving at a satisfactory reason for its prohibition, when its use as food would prove dangerous. These *criteria* Gerlach gives us, and as they are based on his own experiments and observations, he believes them to be reliable. They are : (1) when there is decided disease of the lymphatic glands ; (2) when the tubercles are breaking up and becoming cheesy ; and (3) when tubercles are found in different parts of the body. If either of these conditions is present, the flesh is unfit for food ; but its use is most dangerous when there are deposits of cheesy tubercle in the lungs. Disease of the lymphatic glands accompanies Tuberculosis in the domesticated animals, and is therefore an aid in diagnosing the malady when its

effects elsewhere cannot be ascertained during life. When we find cheesy deposits, we are certain to have the lymphatic glands involved in disease. Should there be any doubt as to whether it is due to a caseous inflammation, cheesy Pneumonia, or a veritable Tuberculosis, the condition of these glands will decide the question. Gerlach only reckons the cheesy inflammation, which is distinct from specific Tuberculosis, as a disease which makes the flesh unfit for food.

We cannot refer, to any satisfactory extent, to the symptoms and lesions produced by feeding the experimental animals on tubercular matter, nor on the different results obtained in different species. Suffice it, therefore, to say that they existed in two degrees—the largest number of animals being affected with Catarrhs—follicular Catarrhs—due to relaxation and tumefaction of the tissue of the mucous membrane and its glands—both the solitary and Peyer's patches, most of which were more or less swollen, and covered with a copious layer of thick mucus. Rabbits chiefly suffered from this milder form. Sheep were affected with the severer form of Tuberculosis, and in them were found crude and cheesy tubercles. In pigs, the mucous membrane of the pharynx was involved, when they were not fed with the tubercular matter by means of an œsophageal tube.

The lymphatic glands in the vicinity of the diseased mucous membrane were swollen, œdematous, and abnormally filled with lymph corpuscles ; at a more advanced stage, there were miliary tubercles and small cheesy deposits ; still later, partial or general caseation of the glands ; and after a long period from the date of infection, there was thickening of the connective-tissue septa of the gland-lobes, with layers of miliary tubercles. The mesenteric and intestinal glands, as well as those of the throat, were infected and diseased. The mucous membrane of the mouth and pharynx, as already mentioned, became affected through contact with the matter on which the animals were fed.

After the lymphatic glands were involved, other organs became affected : first the lungs ; after them, though seldomer, the liver ; still more rarely, the spleen and kidneys ; and at times other parts—as the joints, *dura mater*, etc. The lungs generally exhibited the Tuberculosis *in optima forma;* in the subpleura, and deeper in the lung, were tubercles in various stages and of various sizes. When the disease was of brief duration, there were recent, grey, smooth, miliary and submiliary tubercles ; when it had run a longer course, there were cheesy masses the size of a pea, and larger in some cases, —in rabbits particularly, with inflammation of parts of the lung ; and where adhesion had taken place between the pleura pulmonalis and the pleura costalis, there were generally the largest cheesy masses—Tuberculous Pneumonia. The bronchial glands were always affected, either indirectly through the lungs, or directly through the alimentary canal.

Arthritis occurred in calves ; and Gerlach believes, as another result of his experiments, that the tuberculous Arthritis of calves is due to a tuberculous mother, or follows rearing by a tuberculous cow ; therefore he is of opinion that the so-called "Calf-lameness" (*Kälberlähme*) is, in one of its forms, a tubercular Arthritis. It is surmised that, under the collective designation of "lameness," there are three different processes : (1) Rachitism, which is witnessed in its most intense form in foals ; (2) Pyæmia, which Roloff was the first to show gave rise to inflammation of the joints, and was due to inflammation of the umbilicus—his observations with regard to this pyæmic synovitis being corroborated by Bollinger at a later period ; and (3) tubercular Arthritis.

Some of the young pigs exhibited symptoms of inflammation of the outer and middle ear, and when killed all were found to be diseased ; the five which had shown these symptoms had tuberculous tumefaction of the middle

ear, one had the inner ear involved, the labyrinth being filled with masses of fibrous tubercle. The mesenteric glands were tuberculous, there were great numbers of miliary tubercles in the lungs and liver, and some in the spleen and kidneys.

In our works already alluded to, in which we gave a summary of the knowledge that had been obtained from experiments in Tuberculosis up to the date of their publication, we mentioned some interesting results obtained by M. Viseur, an accomplished veterinary surgeon in Arras, France. In the *Recueil de Méd. Vétérinaire* for September, 1875, that gentleman gives an equally interesting account of additional experiments he had undertaken to further elucidate the transmissibility of Tuberculosis by the digestive organs.

Towards the end of 1874, he lodged, in spacious, well-ventilated kennels in the *abattoir* of Arras, six cats, three dogs, and a pig. The latter died from gangrenous Erysipelas some days after the experiments were commenced, but nothing of the nature of Tuberculosis was found at the autopsy. All the other animals were fed alternately on fresh healthy flesh, and boiled paunch and bread. On October 24, the morning ration was replaced by the *débris* of the lungs and glands of a tuberculous cow, which the animals ate voluntarily, some of them with avidity. Cats Nos. 4 and 5 were rather exceptions, as they only took ten grammes of tubercular matter. This feeding was repeated on October 30, November 2, 9, and 18, and December 1 and 5. At the latter date, the youngest animals showed symptoms of illness; they were less lively, coughed frequently, and had Diarrhœa. On December 21 they could scarcely move, and refused their food, and Nos. 3 (cat aged seven months) and 4 (cat aged three months) died; No. 5 (cat three months old) succumbed the second day after, the cold then prevailing being supposed to have accelerated the succession of morbid phenomena.

Nos. 1, 2, and 6 were not in good condition; their coat was dry and erect, and they coughed; but their emaciation was as nothing when compared with that of the younger animals, whose digestive and assimilative functions, in consequence of their age, were greatly disturbed.

The autopsy of the animals which had died, as well as the slaughter of the survivors, was fixed for December 24—sixty-one days from the commencement of the experiments. On December 22, two of the cats escaped. The bodies of the remaining four were opened in the presence of Dr. Christien, President of the Central Medical Society of the Nord, and Professor in the Lille Medical College; Professors Bremards and Germe of the Arras Medical School; and Veterinary-surgeon Canna of the Engineers.

In all the animals the respiratory organs were seriously affected (*gravement atteint*). The lungs were studded, superficially and deeply, with grey, hard, semi-transparent nodules. The deep-seated ones were about the size of a large pin-head; those more superficial were spherical and reduced to the size of the finest miliary granulations, difficult to break up, and giving the pleura a roughened aspect. The submaxillary, retro-pharyngeal, and pre-pectoral glands were very visibly tuberculosed. In one animal the lesions had reached an extraordinary degree of generalisation; the laryngeal mucous membrane offered different phases of the disease—granules and ulcerations closely set together. The digestive organs offered a still more remarkable condition. In the peritoneum, the granulations were particularly grouped in the terminal portion of the ileum and the commencement of the colon: they were dense, resisting, and the size of millet or hemp-seed. In the small intestine, Peyer's patches had more or less undergone the effects of tuberculous inflammation. Around the ileo-cæcal valve in one case (cat) were ulcers, some of them extending through the muscular coat. In another cat the lesions were startling (*effrayantes*), the ileum being the seat of a veritable

confluent eruption ; its walls were thickened, hard and rough to the touch, and its serous membrane had also become greatly thickened, and showed layers of superposed granules. The mesentery was shrunken, and its folds, from the points where absorption had been most active, exhibited, on the course of the lymphatic vessels, numerous semi-transparent granules the size of small grains of sand disposed in a typical manner. The glandular apparatus was in such a state of tubercular hypertrophy, especially in the young animals, as to account at once for the marasmus that ensued. The pancreas of Aselli, and the other glands annexed to the ileum and colon, were more than double their natural volume, and at some points were filled with a whitish, semi-transparent, more or less cheesy matter, and yellowish or cretaceous matter in others. The liver and spleen, chiefly the latter, contained salient tuberculous nodules. The other abdominal organs appeared to be healthy.

None of the cats had escaped infection, and the infecting agent had acted so powerfully, that the multiplicity, generalisation, and gravity of the lesions were remarkably apparent. With the dogs the results were less uniform, though they had gluttonously eaten a large quantity of tuberculous matter.

The social aspect of the question brought into view by the results of his experiments, is carefully considered by Viseur. He remarks that all observers are agreed that, apart from its artificial production by experimentation, the disease scarcely ever affects young cattle, *except as the result of contagion through cohabitation with phthisical animals.* Those which bear the germs of the disease at birth, in which it is only *hereditary* and of *slow evolution*, often reach the slaughterhouse in a state of perfect health, and before the germs have been hatched, so to speak : provided that to the hereditary predisposition there is not added insufficiency of respirable air and light in their dwellings, decrepitude, and "physiological misery"—circumstances in themselves capable of producing Phthisis.

The flesh from tuberculous cattle, which are generally worn out from old age and numerous calvings, should be interdicted. In the North of France, the first object in cattle economy is the production of milk and butter ; but if the small farmers, instead of requiring nine and ten calves from the same cow, were satisfied with five, then the cows, being only at this time about seven years old, still possess the power of assimilating food quickly and advantageously, and would furnish a large quantity of flesh of the first quality,—thus adding to the source whence populations derive their strength. Five or six years after this period, these cows are consumptive (*poitrinaires*), in the proportion of 20 or 30 per cent., and *infect, at first, those nearest them, then communicate to their later progeny the germs of a disease which, from being in many cases an acquired one, thus becomes hereditary.*

Viseur adds, that at this time these cows only yield milk poor in nitrogenous matters, fat, and sugar, but rich in water and earthy salts ; this milk, owing to its composition, should be unhealthy for children of a tender age. He admits that the flesh of such animals is often a delusion, if not a source of danger, for those who have the misfortune to consume it ; and he justly states that a diminution in the number of old cows would cause a proportionate increase in the adults, so that all the calves likely to grow into useful breeders would be reared, and we should no longer have to note, with regret, the profusion with which, before they are three months old, calves are killed in the abattoirs, and which exhibit in the highest degree those general and local indications which characterise an aptitude for dairy purposes.

Once more we have drawn attention to this most important question, which should obtain the serious notice of the public. The first in this country to point out its gravity, we can only from time to time urge the necessity for

taking notice of our warnings. Tuberculosis in cattle is a very common malady in these islands; and the same disease in its various forms, as well as Diarrhœa, is terribly prevalent and fatal in our own species. How far this mortality may be dependent upon the consumption of the flesh and milk of diseased animals, we dare not say; but the skilfully conducted and well contrived experiments of members of the veterinary profession, have placed beyond doubt the possibility of this transmission; and though the fact that this proof has been furnished by them, may cause it to be lightly valued by those who look with a jealous eye upon the advancement of veterinary science, yet the public danger is not thereby diminished, but rather increased. And as we have a public and a professional duty to perform in this matter, we shall not cease to refer to it as often as may be necessary, regardless whether the future investigations be those of veterinarians or members of the sister branch of medicine: both being workers in the same field, and both labouring to the same great end.

REPORT OF THE CATTLE PLAGUE COMMITTEE.

THE following is the full text of the report of the Select Committee appointed to inquire into the causes of the recent outbreak of Cattle Plague, and the measures taken for its repression; and into the effect which the importation of live foreign animals has upon the introduction of disease into this country, and upon the supply and price of food :—

"1. Your Committee have examined witnesses from the Privy Council Department and representatives of the different trades affected, as well as of the agricultural interest, and have taken much evidence as to the dead meat trade recently established with America, and the supply of food to the manufacturing towns.

"2. They have had before them the evidence taken upon this subject by the Committee of 1873, and their report.

"3. Your Committee will first consider the question of Cattle Plague.

"4. They have carefully gone into the causes of the recent outbreak, and have ascertained that the disease was imported by animals arriving from Hamburgh before the authorities here had any intimation of the outbreak at that place. They are glad to be able to report that they are satisfied by the evidence that, with proper regulations, Cattle Plague might be stamped out in a short time, and that no ground really exists for the fear of its becoming as destructive as it was in 1865. But the existing provisions, whether for its prevention or for its suppression, require considerable improvement.

"5. With respect to the risk of introduction of disease into this kingdom, serious difficulties must always surround the importation of cattle from abroad, especially from a country like Germany, with a long exposed frontier. In such a case no measures short of prohibition would give the necessary security; whilst as to other countries the evidence leaves no doubt as to the necessity of foreign Governments imposing stricter regulations on their export trade in live stock, and especially providing that notice of any outbreak of Cattle Plague shall be forthwith communicated by telegraph to the authorities of this country. These are matters which should be made the subject of international arrangement.

"6. With regard to home arrangements, the recent outbreak in this country suffices to prove that the system under which the powers of dealing with disease are, in the first instance, committed to the local authority, does not work satisfactorily, and that the powers of the Privy Council should, in every instance, be exercised at the earliest moment, and that, with this view,

it should be the duty of the local authority at once to inform the Privy Council of any outbreak of the malady.

"7. That the power to order the slaughter of suspected animals should extend to animals on premises adjoining to those actually infected, seems as necessary to your Committee as it did to the Committee of 1873.

"8. Your Committee are also of opinion that further inducement should be held out to owners of stock to report the first appearance of the Cattle Plague amongst their stock. At present, whilst one-half of the value is paid as compensation for any animal actually diseased, only three-quarters is allowed for an animal slaughtered on suspicion. Your Committee consider that in the latter case the full value should be paid, subject only to a maximum of £40.

"9. Lastly, your Committee recommend that all compensation for the slaughter of animals on account of Cattle Plague, whether such animals are actually diseased or only suspected, should in future be defrayed out of imperial, and not, as now, out of local funds. This change in the incidence of the charge is almost a necessary consequence of the change previously recommended. under which the order for slaughter will, in all cases, proceed from the central instead of the local authority; but apart from this it appears justified by considerations of public expediency. The rapidity with which Cattle Plague, if left unchecked, spreads far and wide, makes it a matter of general concern that measures should be immediately taken for its suppression. Experience has shown that it can with certainty be suppressed by the slaughter of all animals within the zone of suspicion, and by no other course; and further, that if the case is promptly dealt with, the limits of this zone are comparatively narrow. The order for the necessary slaughter is therefore one which should be made without hesitation, and any compensation which in consequence becomes payable may be deemed a cheap insurance against what would otherwise become a national misfortune.

"10. But Cattle Plague is not the only question. It was abundantly proved in evidence that the ravages of Cattle Plague since the Act of 1869, and the diminution of the breeding herds of the kingdom from the fear of breaking out of Cattle Plague, are as nothing compared with the losses inflicted and the enterprise checked by Pleuro-pneumonia and Foot-and-mouth Complaint. In addition to the losses to the community of animals actually destroyed by either of those diseases, or slaughtered to prevent the spread of Pleuro-pneumonia, the agricultural and other witnesses laid great stress on the fact that whatever loss fell upon the farmer from the deterioration of his stock through Foot-and-mouth Complaint re-acted injuriously on the consumer, by the diminution in the number of fat stock which the farmer was able to place on the market in a given time.

"11. One witness, it is true, Mr. Gebhart, questioned the capability of the grazing lands of the country to support herds much larger than those which now exist; but in this view he stood alone. Witnesses with practical experience, like Mr. Booth, Mr. Clare Read, Mr. Jacob Wilson, Mr. James Howard, Mr. Adam Smith, and the President of the Scotch Chamber of Commerce, Mr. Melvin, all agreed that if immunity from these two scourges were assured beforehand, such an increase might be anticipated in the breeding herds as would in the course of a certain time be large enough to make up for whatever diminution of supply might be occasioned by any new restrictions on the import from foreign countries.

"12. Both these diseases are attributed to foreign origin; at all events, it was admitted that they are widely prevalent in some countries from which importation now takes place; and the number of cargoes stopped at the ports on account of disease having been actually discovered in the animals when landed, justifies the opinion that in many other cases animals really

contagious are passed by the inspectors at the ports, owing to the voyage having been too short to allow the malady to develop to that stage where it is open to detection. This is more especially the case in Pleuro-pneumonia, which has often been known to lie dormant for periods varying from two to three months.

"13. If, however, it was proved how inseparable from the importation of foreign cattle is the risk of the introduction of these two diseases, it was shown beyond a doubt that at the present moment they both exist so largely in this country that unless further restrictions are applied to the movements of our home stock, no restrictions on the foreign trade can give the least hope of the eradication of these diseases, which is the necessary condition of any adequate development of the home supply. In fact, it was admitted by every witness that if these diseases are to be stamped out, both kinds of restrictions were equally indispensable.

"14. In the opinion, therefore, of your Committee, the first matter to be decided really is, whether the farmers of this country are prepared to submit to the inconvenience of such home regulations as may be found to be requisite. Should this be the case, then, and then only, would arise the further question as to whether new restrictions should be placed on the foreign import.

"15. Adopting this order, your Committee proceed to consider the home regulations which the various witnesses insisted upon as necessary.

"16. On this point, Professor Brown expressed a very strong opinion that, whether for the purpose of dealing with Cattle Plague, should it arise, or of stamping out Pleuro-pneumonia and Foot-and-mouth Disease, one of the most important amendments of the existing system would be the establishment of uniform regulations applicable to the whole country, such regulations to be issued by the Privy Council, and to be carried out by Privy Council inspectors stationed in each district.

"17. So far as relates to the necessity of uniform rules to be issued by the central authority, Professor Brown's views were strongly supported by Lord Fitzhardinge, Mr. Rea, Mr. Wilson, Mr. Stratton, Mr. Adam Smith, Mr. Melvin, Mr. Soulby, and Mr. Clare Read, on the part of the agricultural interests; by Mr. Tisdall, represesenting the Dairymen's Society; by Mr. Giblett and Mr. Lambert, two salesmen; and by Mr. P. Rudkin, on the part of the market authority of the city of London. The evils of the present want of uniformity were forcibly illustrated by Mr. Wilson's description of the different regulations which had recently prevailed at the meeting point of the districts of three local authorities at Newcastle.

"18. But when it came to that part of the suggestion which placed the appointment of the local inspectors in the central authority, the witnesses were not so unanimous. Lord Fitzhardinge, Mr. Rea, Mr. Wilson, Mr. Adam Smith, Mr. Tisdall, and Mr. Stratton were of opinion that if, as they suggested, the central authority were to make regulations for the whole of the country, the central authority should also, in order to ensure their regulations being carried out, have the nomination of the inspectors. On the other hand, Mr. Melvin recommended that the localities should appoint their own inspectors as now, but that the Privy Council should have a travelling staff to see that these local inspectors properly carried out the rules, just as inspectors of the Local Government Board supervise the action of the local poor-law authorities. Mr. C. Read supported the latter view, with the qualification that all local authorities in the same county should be united for the purpose of appointing inspectors; while Mr. James Howard and Mr. Soulby urged that the police, responsible as they are to quarter sessions in counties and to town councils in boroughs, are sufficient to carry out any regulations, subject only to the intervention of the Privy Council in the case of a serious outbreak.

"Your Committee are of opinion that the Privy Council could not undertake the work of local inspection throughout the kingdom, and agree with Mr. Melvin that the appointment of inspectors should rest with the local authority, subject to the supervision of the Privy Council.

"20. But whatever difference of opinion existed as to the authority which should enforce the regulations, it was admitted that farmers would find themselves under a much stricter *régime* than that which has hitherto been in operation, inasmuch as in every district where either Pleuro-pneumonia or Foot-and-mouth Disease existed, all movement of cattle would be prohibited except under license; fairs and markets would be under similar restrictions, and absolute prohibition of movement would be enforced against infected farms for periods varying from two months in Pleuro-pneumonia to twenty-eight days in outbreaks of Foot-and-mouth Disease. Further, the same regulations would have to be extended to Ireland and the Channel Islands, or else animals brought by sea from those parts of the kingdom should not be permitted to be landed except at defined ports, where provision was made for subjecting them to proper inspection.

"21. Upon the question whether such restrictions would be accepted, Professor Brown stated his own opinion to be that as these restrictions must be expected to last for a considerable period before the diseases could be stamped out, the country would not endure them, and would prefer the continuance of the diseases to such a cure. Professor Brown, however, admitted that this opinion was not in accordance with what he had been informed were the views of the agriculturists, and as a fact, with the one exception of Mr. Soulby, all the agricultural witnesses who appeared before your Committee—and many of them spoke as representatives of large bodies of farmers in various parts of the country—expressed themselves with confidence that, provided there was an assurance against the re-introduction of disease from abroad, these home relations would be willingly accepted by the farmers of the country.

"22. And your Committee, with this evidence before them, can hardly resist the conclusion that such would be the case.

"23. In the belief, then, that such regulations as have been indicated would be accepted by the home trade, your Committee pass to the question as to what additional restrictions to the foreign trade would have to be combined with such home regulations, in order to give the requisite security.

"24. The inspection of the ports being admittedly insufficient as a protection against Pleuro-pneumonia, and uncertain even in the case of Foot-and-mouth Complaint, some witnesses advocated the total prohibition of live animals from abroad, suggesting their slaughter at the port of embarkation. But the greater number of the agricultural witnesses, including Mr. Odams, Mr. James Howard, Mr. Melvin, Mr. Clare Read, admitted the difficulties of such a course, considering that the country was not prepared for so complete a change, and that the result might be to drive the foreign supply into other markets. They therefore preferred to advise the compulsory slaughter of imported animals at the port of debarkation—all countries, with the exception perhaps of America, being thus treated as scheduled countries at the present moment.

"25. A third proposal which was brought before your Committee, was that, on the one hand, so far as regards Belgium and Germany, the importation from those countries of live cattle should be absolutely prohibited, and of live sheep should be allowed only on the condition that they should be slaughtered at the port of debarkation; and that, on the other, as to unscheduled countries, such as Spain, Portugal, and Denmark now are, all animals coming from there should be freely admitted into our ports, and allowed to

pass inland, provided only that the Privy Council were satisfied with the precautionary regulations in force in such countries.

"26. This suggestion as to the prohibition of the importation of cattle from Germany and Belgium was founded on the extreme uncertainty of obtaining timely information here of any outbreak of disease in Germany, and on the consideration that Belgium is a transit country for German cattle.

"27. On the whole, after considering the various alternatives, your Committee would recommend that, as a statutory arrangement, the importation of all animals from Russia, and all cattle from Germany (with the exception of Schleswig-Holstein) and Belgium should be prohibited; and these last two countries as to other animals, and the rest of Europe as to all animals, should be added to the list of scheduled countries, with power to the Privy Council to forbid the importation of animals from other countries if they think fit.

"And all fat cattle imported therefrom shall be slaughtered at the port, such ports being defined, of debarkation; and that all store, or dairy, cattle should be quarantined for fourteen days at certain defined ports of landing. Such stock, on removal, to be registered as to where sent, and there to be under restraint and immovable for two months.

"28. Your Committee believe that these combined restrictions at the ports and inland would succeed, if enforced, in stamping out these diseases; and assuming this to be the case, the great question would still remain how far the result would affect the supply of meat to the country, especially to large manufacturing towns.

"29. It was acknowledged that to bring about such an increase in the home supply as the witnesses anticipated from the greater security against these complaints, must take time; and the foreign importers and salesmen who opposed these restrictions asserted, as they did in 1873, that any such interference with the present established trade as would arise from slaughter at the ports, would drive the foreign trade to other markets; and thus not only reduce the supply and make meat dearer, but in the interval, before the promised increase in the home stock had been realised, raise the price of meat unduly in many of our inland towns.

"30. On the other hand, many practical witnesses assured your Committee that, instead of diminishing and driving away the supply, the establishment of any fixed rule rendering slaughter at the port compulsory would really increase the number and the quality of the animals sent. They pointed out that the present regulations are not favourable to the exporter. The fact that if, on the arrival of his cargo at the port of debarkation, disease is detected he has to re-ship his animals and take them on to Deptford, or some other port for immediate slaughter, renders him at all times uncertain of his market, and frequently puts him to much expense. The same causes, in their opinion, operate injuriously to Deptford Market itself. The supply to that market mainly comes either from countries temporarily scheduled—*i.e.*, countries from which cattle cannot be imported except into a port where provision is made for their immediate slaughter—or else from casual cargoes, which were originally consigned to other ports, but which, on account of infection having broken out, it has been necessary to bring on to Deptford for slaughter. The supply, therefore, is uncertain from day to day; buyers, in consequence, are not attracted, and from the want of competition prices are irregular. If, on the other hand, it was once made a rule that all foreign animals are to be slaughtered on their arrival in port, it was confidently asserted that a steady trade would arise, and competition be the same as at Islington Market; and in confimation of this view, it was shown that during the recent period of restrictions large supplies had been sent over with the full knowledge that the animals would be slaughtered at the port.

"31. It was next objected, that even if the number of animals sent to this country was not diminished by the animals being slaughtered at the ports, the difficulties of carrying the animals from those ports as dead meat to the inland towns would, in hot weather, be so great as to deprive those towns of much of their present supply, more particularly in foreign sheep; and the butchers from northern towns especially urged that their trade could not be carried on unless they were able, as now, to take the live animals from the port of debarkation to their own slaughterhouses, there to be killed as wanted for their customers.

"32. But the evidence given by Mr. Rudkin, strengthened as it was by that of the Deputy Chairman of the Great Western Railway, Sir Alexander Wood, and other witnesses, leads your Committee to believe that these fears are without foundation, that there is no real difficulty in the supply of dead meat, and, with proper arrangements, even of offal to those towns, and that for some time a dead meat trade, especially in sheep, has been regularly carried on from Deptford Market all over the country, increasing since the restrictions were enforced. Dead sheep have been also sent in large numbers to Wales, not unfrequently coming back to London as Welsh mutton. And the fact that the Aberdeen supply of dead meat to the London market has of late largely increased (reaching an average of from sixty to seventy tons a day, even in hot weather), affords additional evidence in this direction.

"33. Having, then, carefully considered the evidence, your Committee have arrived at the conclusion that compulsory slaughter, at the port of debarkation, is not likely to discourage foreign importation, or to diminish the supply of our large towns, or generally to raise the price of meat. The change, however, would be a considerable interference with the present system of trade carried on by butchers and salesmen. For this reason, and because proper arrangements would in many cases have to be made at the ports selected for debarkation, your Committee feel that it would be well to postpone the commencement of the change for a time sufficient to enable the necessary preparations to be carried out.

"34. With regard to the importation of dead meat from America, as affecting this question, the evidence shows that there are hardly any limits to the amount of meat which can be imported from that country; that in cool weather the meat can without difficulty be delivered here in perfect order, and that with greater care in the packing, and with better arrangements for storage here, it could be brought over in the hottest months. American meat already forms a useful supplementary supply to the meat markets of this country, and in no very distant future will probably constitute a most important addition, and will materially aid the carrying out of such a system as your Committee have suggested above. But the trade is at present in too uncertain and experimental a condition to justify reliance upon it for an unfailing supply.

"35. Another important recommendation which was suggested for checking the spread of these diseases, was made by Mr. Rudkin, Mr. Gebhart, and other witnesses: viz., that cattle exposed in Islington Market should not be allowed to be removed for exposure in any other market. For this purpose they proposed that all animals, on arriving at Islington, should be marked for slaughter, and that the making use of such market in other places, or the exposure in any other market of an animal so marked, should be prohibited under severe penalties. It was shown that this market is the hotbed of various diseases, more especially that the lairs are tainted with the Foot-and-mouth Disease, and that it is the practice of small jobbers to buy fat beasts in this market in order to remove them for re-sale to some local market, where they are necessarily brought into contact with both fat and store stock, and thus become the means of setting up fresh sources of contagion in various parts of the country. These jobbers would no doubt be

affected by the restriction proposed, but no loss would fall on either the producer or the consumer, and your Committee have no hesitation in recommending the change as one of considerable value.

"36. In connection with this part of the subject, the attention of your Committee was also directed to the prevalence of disease in the dairy sheds in the Metropolis and large towns, and the great danger of contagion being carried from them into the markets, and thus spread throughout the country. The evidence showed the constantly-changing nature of the trade, that cows are sent into the markets on showing the least symptom of being affected, and their places filled by fresh stock. The danger from these sheds was strikingly proved by the last outbreak of Cattle Plague in London.

Much evidence has also been given as to the feasibility of superseding town dairies by milk from the country. It was proved that by far the larger part of the present supply of London was brought from dairy farms established for the purpose, often at a considerable distance from town; nor is there any reason to suppose that the milk thus supplied is inferior in quality. Mr. Tisdall, who appeared on the part of the Dairy Association, stated that there was no difference in the quality or the price of the milk produced as between his dairy at Epsom and his cowshed in London, and admitted that the metropolitan supply from the country dairies arrived in perfect condition. From his evidence, your Committee were also led to believe that the Dairy Association were well aware of the dangers of infection from their town sheds, and were willing to submit to regulations and inspection. On the whole, notwithstanding much evidence against the continuance of dairy-sheds in large towns, your Committee are of opinion that if registration, a real inspection, and sufficient regulations as to the movement of animals to and from these places are enforced, they may be allowed to remain without danger to the public.

"37. Your Committee have already alluded to the necessity which, in event of the same regulations not being adopted in the three parts of the kingdom, which arise for defining ports in Great Britain, where alone animals from Ireland or the Channel Islands would be allowed to be imported by sea, and where they would be examined by an inspector before being suffered to pass inland. The evidence of Lord Fitzhardinge and Mr. Peters showed that it has occurred that infected animals from Ireland have been landed at a British port where there is no provision for inspection, and have been then driven through healthy districts to the various markets, and thus distributed throughout the country. Such a system your Committee feel could not be permitted to continue if, with a view to stamp out the diseases, Great Britain was subject to regulations controlling the movement of home stock, and adding permanently to the number of scheduled countries. And your Committee think it to be their duty, in view of the evidence which they have received, to recommend that a searching inquiry should be made into the subject of the transit of cattle from Ireland to the ports of Great Britain, into the provisions made for their reception at the ports of departure and of arrival, and into their treatment during the voyage.

"38. In conclusion, your Committee recommend as follows:—

"(1.) That as a statutory arrangement the importation of all animals from Russia, and of cattle from Germany (except Schleswig-Holstein) and Belgium, be prohibited, whilst that of other animals from these last two countries, and of all animals from the rest of Europe, should be subject to the provisions of the same schedule; power being reserved to the Privy Council to prohibit the importation of animals from other countries if they think fit. An exception, however, should be made in favour of store and dairy animals, provided they remain in quarantine for fourteen days, and afterwards are placed under inspection for two months.

"(2.) That the Privy Council should be empowered to deal directly with the Cattle Plague whenever it appears in this country, and that for this purpose it should receive from the local authority immediate notice of every outbreak.

"(3.) That the power to order the slaughter of animals suspected of Cattle Plague should extend to animals in premises adjoining to the infected premises.

"(4.) That whilst the compensation for the slaughter of animals affected by Cattle Plague should remain as it is at present, the compensation for the slaughter of animals suspected of that disease should be the full value (not however exceeding £40).

"(5.) That all compensation for the animals so slaughtered, whether diseased or suspected, should be defrayed from imperial funds.

"(6.) That in case of Pleuro-pneumonia or Foot-and-mouth Disease breaking out, the Privy Council should have power to fix the limits of the district which is to be treated as infected.

"(7.) That uniform rules applicable to all districts declared infected should be issued by the Privy Council, but should be enforced by the local authority, subject to the supervision of the Privy Council.

"(8.) That, in the case of Pleuro-pneumonia, the compensation for the slaughter of animals, whether suspected or diseased, should be at the same rate as in the case of Cattle Plague, but should be payable out of local funds.

"(9.) That stock exposed in Islington Market should not be allowed to leave the metropolitan district alive.

"(10.) That, in the Metropolis and large towns, dairy and cattle-sheds should be subject to registration, inspection, and regulations.

"(11.) That the restrictions applicable to Great Britain should be extended to Ireland and the Channel Islands, or else that ports should be specified in Great Britain by the Privy Council, to which alone importation of live animals from Ireland and the Channel Islands should be lawful, the animals not being permitted to be taken inland unless examined and passed by a Privy Council Inspector at the port of debarkation.

"(12.) And your Committee are of opinion that no further restrictions should be placed on the importation of foreign animals in respect to Foot-and-mouth Disease and Pleuro-pneumonia, unless at the same time orders be enforced throughout Great Britain that in every district where either Pleuro-pneumonia or Foot-and-mouth Disease exists, and which has been declared by the Privy Council to be infected, all movement of cattle be prohibited except under license; that fairs and markets be under similar restrictions; and that absolute prohibition of movement be enforced against infected farms for periods varying from two months in Pleuro-pneumonia, to twenty-eight days in outbreaks of Foot-and-mouth Disease.

"(13.) That where required effect should be given by the Legislature to these recommendations.

"*July 25th*, 1877."

PRESENTATION TO PROFESSOR COOKE, OF THE GLASGOW VETERINARY COLLEGE.

ON the 19th of July the students of the above College met within the lecture room, under the presidency of Professor McCall, when Professor Cooke was presented with a magnificent timepiece, which bore the following inscription :—"To Professor Cooke, F.C.S., from the Students of Glasgow Veterinary College, in token of their appreciation and esteem. Session 1876-7."

Mr. Mahoney, in making the presentation, spoke of the many high qualities of Mr. Cooke, both as a man and as a teacher, and alluded to the untiring energy and zeal which he had displayed in conducting his classes. He concluded by wishing that "success which true genius only can merit, and substantial ability deserve."

Professor Cooke, in thanking the students for their handsome present, said that no class were more gratified to know that their services were appreciated than teachers. Students now had more time to devote to their studies, and in consequence more was expected of both teachers and students. He thought he had only done his duty, and was extremely grateful to know that his labours had given satisfaction.

ROYAL COLLEGE OF VETERINARY SURGEONS.

AT the several meetings of the Scottish section of the Court of Examiners of the Royal College of Verterinary Surgeons, held in Edinburgh and Glasgow on July 18th, 19th, and 20th, the following students passed their "First Examination":—

EDINBURGH VETERINARY COLLEGE.

Mr. John Blench.
„ Thos. Mallalieu Curtis.
Mr. Charles Rutherford.
„ Geo. Marshall Mitchell.
Mr. Alexander Grey.

EDINBURGH NEW VETERINARY COLLEGE.

Mr. William Henry Bridge.
„ Josiah Simpson Walker.
„ Frederick Bridge.
„ Wm. Henry Moore.
„ Richard Tinsley.
„ Geo. Alfred Browne.
„ Henry Hannan.
„ Edward Kitchin.
„ Frank Bottomley.
„ Andrew Hume.
„ Thomas Herbert Lewis.
„ Wharton Wm. Foister.
Mr. John Legge.
„ Edmund Woods Goldsmith.
„ John Edwards.
„ George Sandeman.
„ John Henry Wilson.
„ John Carr.
„ Edward Hugh Leach.
„ Kay Lees.
„ Thomas Barritt Stone.
„ Philias Martial.
„ Frederick Garside.
„ Alfred Jones.

GLASGOW VETERINARY COLLEGE.

Mr. William Clay.
„ John McDougall.
„ John Baillie Hamilton.
„ James Storrar.
„ Robert John McGuire.
„ William McQuiston.
Mr. Wm. Ferguson McGhee.
„ William Miller.
„ Bernard Patrick J. Mahoney.
„ Richard Hughes.
„ Charles Currie.
„ Alexander Cochrane.
Mr. Jeremiah McCarthy.

THE FITZWYGRAM PRIZES.

THE notices and regulations with regard to the above prizes were issued to graduates of the Royal College of Veterinary Surgeons who had obtained their Diploma since May 1876, and also to the students of the respective veterinary schools.

The examiners appointed were James Collins, Esq., P.V.S. Army, James Lambert, Esq., 17th Lancers, and Professor Duguid, of the Brown Institution.

The superintendents were the Secretary of the Highland and Agricultural Society, Edinburgh, and the Secretary of the Royal College of Veterinary Surgeons.

The second part of the examination was held in London.

Fourteen names were sent in.

From the London Veterinary College the names of seven candidates were entered, of whom five competed and two withdrew. From the Edinburgh Veterinary College three candidates were entered, but subsequently withdrew. From the New Veterinary College, Edinburgh, four names were entered, and two withdrew.

The written examinations took place in London and Edinburgh on Wednesday, March 21st, and Thursday, 22nd.

The following is the result and the number of marks obtained by each competitor :—

LONDON VETERINARY COLLEGE.

	Nos.	Anatomy. 300	Physiology. 300	Pathology 300	Chemistry. 150	Materia Medica. 75	Botany. 75
Mr. Joshua A. Nunn, M.R.C.V.S.	48	200	161	230	71	45	33
Mr. Lawrence Clark Tipper	49	185	168	150	101	44	50
Mr. Chas. Edward Smith ..	51	170	180	90	89	66	56
Mr. Richard Glover	53	240	178	170	115	66	51
Charles Sheather	54	125	190	150	121	69	59

NEW VETERINARY COLLEGE, EDINBURGH.

	Nos.	Anatomy. 300	Physiology. 300	Pathology. 300	Chemistry. 150	Materia Medica. 75	Botany. 75
Mr. William Atkinson.....	40	115	135	100	63	26	29
William Henry Roughsedge	41	185	143	150	94	45	48

The only competitors who were eligible for the *vivâ-voce* examination were Mr. Richard Glover and Mr. L. C. Tipper, both from the London Veterinary College.

The *vivâ-voce* examination, arranged to take place at "the Brown Institution" on April 10th, had to be deferred until July 27th, in consequence of a severe accident to one of the competitors.

The report of the *vivâ-voce* and practical examination, for which 600 marks were assigned, was as follows :—

	Nos.	Diagnosis of Disease. 200	Shoeing. 100	Examination for Soundness. 200	Selection of Horses for specific purposes. 100	Total.
Mr. Richard Glover	53	100	30	100	50	280
Lawrence C. Tipper.....	49	95	50	100	50	295

	First Examination.		Second Examination.		Total.
Mr. Richard Glover.....	820	...	280	...	1100
Mr. Lawrence C. Tipper	698	...	295	...	993

RESULT.

First Prize ..... Mr. Richard Glover..... £50.
Second Prize ..... Mr. Lawrence C. Tipper... £30.

WM. HENRY COATES, *Secretary.*

NEW VETERINARY COLLEGE, EDINBURGH.

PRIZE LIST, SUMMER SESSION, 1877.

ANATOMY.—*Medallist:* Edward Kitchin. *Certificate of Merit:* Frank Bottomley, William Henry Moore, William Henry Bridge.

BOTANY.—*Medallist:* Thomas Herbert Lewis. *Certificate of Merit:* Edward Hugh Leach, John Carr.

MATERIA MEDICA.—*Medallist:* Thomas Herbert Lewis. *Certificate of Merit:* William Henry Bridge.

Eleven candidates presented themselves for the Minor Examination under the old rules, and nine passed.

Seventeen candidates presented themselves for the First Examination, and sixteen passed.

Reviews.

VETERINARY NOTES FOR HORSE-OWNERS: AN EVERY-DAY HORSE-BOOK. By M. Horace Hayes, Capt. Bengal Staff Corps. London: Thacker & Co., 1877.

Captain Hayes, who has been studying veterinary medicine at the Edinburgh New Veterinary College, has compiled a handy little book for the use of horse-owners, which may prove of much service to them when they cannot obtain the assistance of a veterinary surgeon, as well as afford them some notion of many of the ailments to which the horse is exposed, and the manner in which they may be best treated. The work is dedicated to Professor Williams, whose views with regard to the majority of the maladies referred to, as well as their treatment, are those here given, and from whose works copious extracts are made. We do not know that there is anything particularly novel to members of

the profession in the book, which is intended for the use of amateurs. Perhaps the utility of ipecacuanha in assisting in relieving congestion of the liver, may be new to some practitioners. On the advice of Veterinary Surgeon Kettlewell, of the Bengal studs, Captain Hayes tried that agent in several cases of liver congestion, and always with marked success. Christison had previously pointed out the action of the drug on that organ. The dose recommended is 1½ drachm in bolus twice a day for a week.

The book has several well-drawn woodcuts; and the frontispiece, giving a representation of good fore-legs, is particularly well executed. Altogether we think the "Notes" will fully serve the end for which they were intended.

A Dictionary of Hygiene and Public Health. By A. W. Blyth, M.R.C.S., F.C.S., etc. London: C. Griffin & Co., 1876.

The great importance which sanitary science has now assumed renders works of reference on hygiene and public health absolutely necessary to the student of what may be designated State medicine. Among the many books which have already appeared on this subject, the Dictionary by Dr. Blyth must be reckoned one of the best and most useful.

Written on the plan of Tardieu's celebrated "Dictionnaire d'Hygiène Publique," it is in several respects an improvement on that justly esteemed work. It comprises everything necessary to be known by the hygienist in sanitary chemistry, engineering, and legislation, with the dietetic value of foods and description of the means for the detection of adulterations. The author has largely availed himself of every convenient source of information; though had he consulted writers on comparative pathology and Veterinary Sanitary Science, he would have avoided some errors and made his work more complete.

However, as it stands, it is a most valuable and exhaustive compendium of knowledge on a subject of the deepest importance to all civilised communities; and embracing, as it does, everything connected with the preservation of health and the prevention of disease, it has claims on the attention of the veterinary profession, the members of which will find much valuable instruction in its pages.

Proceedings of Veterinary Medical Societies, etc.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting of the above Society was held, on the 27th June, 1877, at the Blackfriars Hotel, Manchester, Mr. Tedbor Hopkin, President, in the chair.

The following gentlemen were present:—Messrs. E. A. Woolner, Chas. Ashworth, Heywood, Alex. Lawson, Sam. Locke, W. A. Taylor, and Tom Taylor, Manchester; Hugh Ferguson, Warrington; W. C. Cartright, Whit-

church ; J. B. Taylor, Ashton-under-Lyne ; Jas. Marshall, Knutsford ; John Paulden, Bury ; John Burnell, Jas. Hart, Oldham ; Beard, Macclesfield ; W. Woods, Wigan ; A Briggs, Bury ; and the Secretary.

Letters of excuse were read from Messrs. Welsby, R. Reynolds, M. J. Roberts, and John A. Taylor.

Messrs. J. C. Atkinson and Beard, proposed by Mr. Locke and seconded by Mr. J. B. Taylor ; Mr. Peter Taylor, proposed by Mr. A. Taylor and seconded by Mr. Woods ; Mr. Faulkner, proposed by W. A. Taylor, seconded by W. Woods ; Mr. Thos. Greaves, proposed by W. C. Cartwright, seconded by Geo. Darwell ; Mr. Jas. Marshall, proposed by J. B. Taylor, seconded by S. Locke ; Mr. Thomas, proposed by Tom Taylor, seconded by J. B. Taylor, were duly elected members of this Association.

The business on the circular was then proceeded with. The report of the committee formed at the last meeting to consider the advisability of changing the place of meeting not being thought of a satisfactory character, Mr. W. WOODS proposed, and Mr. ALEX. LAWSON seconded, "that the matter be referred back to the committee." The motion was carried.

Mr. W. A. TAYLOR, secretary to the Election Committee, handed in his report as follows :—" The committee apointed at the last quarterly meeting to take means to ensure the election of Mr. Peter Taylor—the chosen candidate of the Society—as member of Council of the R.C.V.S., and to act in concert with the Yorkshire, Liverpool, and Midland Counties Societies as regarded the election of the representative candidates of the four societies collectively,—met on several occasions. Your committee think it almost superfluous to state that their labours were crowned with success, as all interested must have seen with pleasure and satisfaction the positions occupied on the return lists by the Society's candidates, viz.,—

Mr. Peter Taylor	560	Mr. Rich. Reynolds	458
,, Jas. Cuthbert	484	,, Francis Blakeway	440

Signed, W. A. TAYLOR, *Secretary to Committee.*"

Mr. TOM TAYLOR then proceeded to give the history of a case of "Dumb-madness," in which some unusual symptoms were observed ; the principal being lameness in both fore-legs, due to a semi-paralysed condition of the limbs. There were also present the general symptoms of this disease : such as snapping and dropping of the lower jaw. The discussion following on the recital of this case lapsed into an instructive and very interesting one on the "spontaneous origin of Rabies." A variety of opinions was given on this subject, both for and against ; but no definite conclusion was come to, although some light was thrown on this obscure disease.

Mr. TAYLOR then referred to a case of Tetanus he was treating with nitrite of amyl ; and although he had given that supposed remedy a fair trial, he did not hope to save his patient. Some discussion followed on the action and mode of administration of this comparatively new drug, which had been given in this—as in Mr. Alex. Lawson's case—by subcutaneous injection. A general review of most of the remedies used in the treatment of Tetanus did not elicit anything of a satisfactory character.

Mr. W. A. TAYLOR exhibited a dog which had on the sclerotic coat of the eye a well-formed dermoid tumour.

Mr. DACRE read a short paper describing a case of so-called "Azoturia" in a gelding. The subject was a well-bred horse in full working condition, being fed on a liberal supply of beans and oats. Having a cracked heel, he was kept from work for five days, receiving during that time his usual allowance of food. On the sixth day, being sent a short journey of two miles, he fell in the shafts, was seized with convulsive fits of a violent character ; the muscles of the quarters, hind-legs, loins, and neck, were hard and rigid ; he

continued straining, the bowels being sometimes protruded through the anal opening. The pulse ranged from 50 to 100 ; and the temperature gradually rose to 104°. On the catheter being passed, an hour after seizure, the urine was found to be of the colour and consistency of linseed oil, but had no unusual odour. An hour afterwards a considerable change had taken place—the urine then being of a dark coffee colour, and having a peculiar smell : on being heated in a test tube it became quite solid. The animal was bathed in perspiration, which had a urinous odour ; and the fit increased in intensity up to the time of death, which occurred in seven hours after the attack.

A *post-mortem* examination, made three hours after death, revealed a singular condition of the kidneys : they were of a dull reddish-brown colour, and on pressure in the hand were easily broken down, emitting a crackling sound ; air bubbles appearing on their surface, due to decomposition of tissue. The bladder was empty and contracted, its mucous membrane having a bluish tinge. All the other organs were comparatively healthy.

A lengthened discussion followed the reading of this paper ; and, as much was still to be said on the subject, it was agreed to adjourn its further discussion until the next quarterly meeting. A vote of thanks to the chairman terminated the proceedings.

W. DACRE, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE quarterly meeting in connection with this Society, was held at the Queen's Hotel, Leeds, on Wednesday, July 11th ; the President, Professor Williams, in the chair.

After the routine business had been completed, Professor WILLIAMS made a few remarks on the recent election of Members of Council, and hoped that moderation would be displayed in the selection of candidates in the provinces for future Council honours.

An essay on "Chronic Diuresis," written by Griffith Evans, M.D., Veterinary Surgeon, Army Service Corps, was then read by Mr. William George Schofield, of Pontefract, which will be found in our "Original Communications," p. 174.

A discussion followed, in which most of the members present took part.

Professor WILLIAMS attributed the emaciation of the body, in Chronic Diuresis, to the tissue products present in the urine. He never had much confidence in the efficacy of clay-water, but considered that the observations taken by Dr. Evans clearly showed its utility. When arising from Indigestion, Professor Williams found iodine beneficial, more particularly after the exhibition of a mild aperient and antacid.

Mr. M. E. NAYLOR, Wakefield, thought that the observations taken by Dr. Evans were not possible in general practice.

The discussion was continued by Messrs. Jas. Freeman, Anderton, Cuthbert, Carter, and Walker.

It was proposed by Professor WILLIAMS, seconded by Mr. NAYLOR, That the essay be sent for insertion in the veterinary periodicals.

A vote of thanks to the chairman concluded the proceedings.

WM. GEO. SCHOFIELD, *Hon. Sec. pro tem.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly council meeting held on August 1st, the following report was received from Professor Brown, and ordered to be published:—

"An outbreak of Cattle Plague was discovered on July 14th, on premises

in Norfolk Street, Bethnal Green, among ten cows, all of which were found to be affected with the disease in various stages, and one, to which further reference will be made, died soon after the existence of the disease was detected. The animals were first seen by Mr. Shaw, the inspector of the local authority, and subsequently by the chief inspector of the Veterinary Department, and also by Professor Simonds, Mr. Priestman, and Mr. Rayment (inspector of the Metropolitan Market), all of whom agreed in the opinion that the symptoms and *post-mortem* appearances indicated Cattle Plague of the most pronounced type. The true character of the disease having been determined, the source of the infection only remained to be investigated; and, considering that there was a long interval between the last outbreak and the one immediately preceding it, a suspicion of the re-introduction of contagion from abroad was immediately entertained. All the facts, however, are in opposition to this idea. Cattle from Germany and Belgium, the only countries through which Cattle Plague is likely to reach us, are excluded; and, further, it has been ascertained that no foreign animals had been recently introduced into the shed where the disease appeared. The only other assumption is that the contagium of Cattle Plague had been preserved in some way in the Bethnal Green district; and the inquiry which has been made has led to the discovery of circumstances which favour this view. Taken in the order of their occurrence, the facts are as follows:— The last reported case of Cattle Plague in the East of London occurred on May 17th. About that time there were eleven cows in the shed in Norfolk Street, where Cattle Plague had not, up to that time, broken out. Early in June Pleuro-pneumonia was reported to exist in the dairy, and at the time of the inspector's visit only eight cows were in the shed; one of them was affected with lung disease, and was slaughtered. The missing cows had been sold, it was stated, to a butcher, probably on account of Pleuro-pneumonia. Seven cows remained, apparently in good health, and towards the end of June a cow, the one which died of Cattle Plague on July 14th, was added to the stock, and in the beginning of July two more were purchased, making the number up to ten, which were in the shed when Cattle Plague was detected.

"Suspicion was naturally directed to the three newly-purchased cows, and an inquiry was at once instituted as to their origin. Two of them, it was ascertained, came from perfectly healthy premises on July 3rd; the other one has a history which quite justifies the assumption that it was infected when it was brought into the shed in Bethnal Green. The animal was purchased of a jobber and drover, who has a small slaughterhouse in Bethnal Green, where he disposes of such animals, cows chiefly, as he can purchase advantageously from time to time. It will not be unfair to suggest that during the existence of Cattle Plague in the district, many cows affected with the disease were killed and dressed in these premises. The cow in question was bought by the dealer at Romford Market, and put into the slaughterhouse for the purpose of being killed. On the following day the cow appeared to have a good bag of milk; and the dealer, instead of fulfilling his first intention, decided that the animal would be more valuable for dairy purposes, and accordingly sold her to the dairyman in Norfolk Street, to whose shed she was taken direct from the slaughterhouse. The date of purchase of the cow has not been clearly made out. The drover asserts that he bought the animal on Wednesday, June 27th. The dairyman thinks that she came into his shed on June 23rd. It is a fact that she was ill on July 10th, and died on July 14th; and it is further certain that the disease had extended to all the animals in the shed when the first inspection was made. The whole history of the outbreak is quite consistent with the idea of an infected animal having been introduced into the shed about the end of June.

"Every precaution has been taken to prevent the spreading of the disease. The slaughterhouse and premises from which the cow was taken have been disinfected, a district round the dairy has been declared an infected area, and the movement of cows out of any cowshed in the area has been stopped. The order which prohibits the removal of cattle, sheep, and goats out of the Metropolis still remains in force, and also the order which makes the Metropolitan Market a place for the sale of animals exclusively for slaughter.

"Cattle Plague has again appeared in Germany, near the Polish frontier, having been introduced, it is believed, by meat from Poland.

"Active measures have been taken by the German Government to prevent the extension of the disease."

Jurisprudence.

GLANDERS OR INFLUENZA.

HENRY LAIDLAW, jun., son of the proprietor of extensive livery stables at Bournemouth, was summoned at the Wimborne Petty Sessions, on June 15th, by Superintendent Hammond, inspector to the local authority under the Contagious Diseases (Animals) Act, 1869, for causing a horse which was then affected with a contagious disease—to wit, Glanders—to be removed on the highway, at Lytchett Matravers, on the 7th of May. Mr. H. T. Trevanion defended.

Mr. George Ames, horse-dealer, of Lytchett Matravers, said defendant brought a horse to his house about the 7th of May. Defendant told him there was a doubt about the horse; and as he did not want to kill it, he asked him if he could put it somewhere away from his stables. He did so. Defendant told him to get an experienced veterinary to see the horse.—Cross-examined by Mr. Trevanion: He sent for Mr. Gillingham, who came to see the horse a day or two afterwards. He said the horse was suffering from Influenza, and he (witness) applied blisters to the horse's throat twice. Mr. Maynard came to see the horse about a fortnight afterwards. He sent for him because he was told Mr. Blake had seen the horse and said it was glandered. After his subpœna had been served on him, he sent for Mr. Aubrey to examine the horse. By the advice of Mr. Maynard he put a donkey in the same building with the horse; and after cutting off the hair on a portion of the donkey's neck, he rubbed in some of the discharge from the horse's nostrils. He saw the donkey that morning, and there was no unhealthy result. The horse was now in better health than when it came there. There was no smell from the mucus. He never thought the horse suffered from Glanders, and was convinced that it was not so diseased.

P.S. Short proved that he served a notice on Mr. Ames on the 4th of May not to remove the horse under any circumstances.

The Deputy Chief Constable was about to call a witness to prove the removal of the horse; but Mr. Trevanion admitted that the horse was removed from Bournemouth to Mr. Ames's premises. Mr. Hammond said that, as the inspector, he objected to the inoculation of the donkey, as Mr. Blake was not present when it was done.

Mr. Richard Stone Blake, veterinary surgeon, of Wimborne, stated that, on the 12th of May, P.S. Short requested him to go to Lytchett Matravers to see the horse. He went there on the 13th, and examined the horse. He found a great discharge from the left nostril, and the doorposts and walls of the stable were covered with it. The glands under the jaw were swollen, and sticking to the sides of the jaw. They were the more swollen from having

been blistered. The horse's general health was not much affected. There was no fever ; and from the absence of symptoms of Influenza and the nature of the discharge from the nose, he concluded that the horse was suffering from Glanders, and gave a certificate to that effect. He believed there could be no better test than inoculation of a donkey, if it was properly done. From his long experience, he had no doubt in his own mind that the horse was suffering from Glanders. He should think the horse had been suffering from the disease for three or four weeks previous.—Cross-examined by Mr. Trevanion : Many cases of Nasal Gleet had been mistaken for Glanders, as it was very difficult to distinguish between the two. He did not use his watch, but he should say the pulsation of the horse was about forty-two or forty-three to the minute. The normal condition would be about thirty-eight. In Glanders the membrane of the nose was, as a rule, more of a leaden colour than red. The most eminent men sometimes made mistakes in cases of Glanders.

Mr. Ames was re-called and questioned as to the inoculation of the donkey. He said he shaved the hair off the donkey's neck with the razor and drew the blood, and then rubbed in the mucus from the horse's nostrils with his fingers.

Mr. Henry Laidlaw, sen., said he was a livery stable-keeper at Bournemouth, and he had nearly 100 horses at the present time. Some time since he had about thirty horses slaughtered for supposed Glanders, by order of the authorities for the county of Hants. The horse now in question, which was called " Charley," he bought of Mr. Corbin some months ago. In April Mr. Perry, of Lymington, had a horse with him at livery which was suffering from a very bad case of Influenza. Some of the horses near, six in all, and " Charley" among them, were affected. Mr. King treated Mr. Perry's horses for Influenza, and Vesey attended his horses and treated them for the same complaint. His son intended to ride " Charley" in the Yeomanry training at Winchester, and the horse was put at Mr. Boyes, at the Sea View, for rest. He saw the horse every day, and in his opinion it was suffering from a bad form of Influenza. He lanced the horse's throat with a penknife himself, and let out the matter. He had no wish to surreptitiously remove the horse, and he drove the sergeant of police over on the Sunday after to see it. He had not the slightest idea the horse was suffering from Glanders, neither did he believe so now.

Mr. John Thomas King, honorary veterinary surgeon of the Bournemouth branch of the Society for the Prevention of Cruelty to Animals, who was not professionally engaged in the case, but gave his evidence to oblige the Bench, said he attended a horse for Mr. Perry at Mr. Laidlaw's stable more than two months ago. He treated the horse for Strangles, and not Influenza.

Mr. John Gillingham, an unqualified veterinary surgeon, of Spetisbury, said he had practised for thirty-two years, and had lots of cases of Glanders. On the 10th of May he examined the horse at Mr. Ames's. He found a slight discharge from the left nostril and a little enlargement of the glands, which he considered could be treated and made right. If a glandered horse were treated for a month for Influenza it would get worse instead of better. He had never known a horse get better from Glanders, either with or without treatment.—Cross-examined by the Deputy Chief Constable : He had never known a horse that was badly glandered go on working for a long time.

Mr. William Maynard, veterinary surgeon, of Romsey, said he examined the horse on the 26th of May. He found a discharge from the near nostril, thin in nature, and not adhering to the nostril. There were no signs of ulceration on the mucous membrane of the nostril. The pulse was thirty-eight to the minute by his watch, and the temperature of the body 104. There was no enlargement of the glands under the jaw. He gave his opinion that the horse was recovering from an Influenza cold. The matter

dropping from the horse's nostrils fell into a pail of water, and floated. That was one of the acknowledged tests : if it floated it was not Glanders ; if it sank it was a proof it was Glanders. He never heard of recovery from a case of Glanders. The disease would have increased if the horse were treated for Influenza, when suffering from Glanders.—Cross-examined by the Deputy Chief Constable : The matter dropping in the water was not an unfailing test, but inoculation of a donkey by a professional man would be.

Mr. Benjamin Aubrey, veterinary surgeon, of Blandford, said he examined the horse on the 5th of June. To a casual observer there seemed very little the matter. The pulsation was thirty-eight to the minute, and the temperature 101. There was no discharge from the nostrils whatever, and the horse had a very good appearance. There was no enlargement of the glands, and no ulceration of the nostrils. His decided opinion was that the horse was not glandered. With the Glanders there would have been more constitutional disturbance, and also a discharge.—Cross-examined by the Deputy Chief Constable : He had seen many cases of Glanders, but he had not seen a case where a discharge was not continuous.

Mr. Walter Charles Boyes, of the Sea View, proved that Mr. Vesey, who had since died, saw the horse at his stables on the 6th of May, and the horse had been there about a week then.

The Bench adjourned the case till the next Court, to enable a veterinary surgeon to apply the crucial test of inoculating the donkey with the discharge from the nostrils of the horse.

Mr. Trevanion said the defendant was summoned to appear at Christchurch Petty Sessions on Monday, for removing the same horse in the county of Hants, and it would be absurd to go over all the evidence again.

Deputy Chief Constable Hammond said he would write to the Superintendent of Police at Ringwood, and ask him not to go on with the charge till the result of the inoculation was known.

At the sessions held on June 22, *Henry Laidlaw, jun.*, of Bournemouth, again appeared in answer to a charge of causing a horse, which was then affected with contagious disease—to wit, Glanders—to be removed on the highway at Lytchett Matravers, on the 7th of May. Mr. H. T. Trevanion defended. The case was adjourned from the last court day, there being contradictory evidence as to whether the animal was or was not suffering from Glanders, and it being desired to test the matter by inoculating a donkey. Since that occasion both a donkey and mare had been inoculated with matter taken from the horse. Deputy Chief Constable Hammond prosecuted, and called

Mr. R. S. Blake, veterinary surgeon, of Wimborne, who said he inoculated a donkey and an old mare on the Monday following the last court day, in the presence of Mr. Aubrey, veterinary surgeon, of Blandford, Deputy Chief Constable Hammond, and a policeman. Mr. Aubrey arranged to meet him on the following Monday to see the effect of the inoculation. Witness went to the place at the appointed time, eleven o'clock, and waited till ten minutes to twelve, but Mr. Aubrey did not arrive. On his return to Wimborne he received a telegram stating that Mr. Aubrey was unable to come, but not giving any reason for it. He had found the doors of the stable were double ones, and P.S. Sharpe managed to get the bottom one open without breaking the lock. He examined the donkey and found it had Farcy. The Glanders of the horse "Charlie" were very much worse, and there were five or six ulcerations ; it had also a bad cough. The mare that had been inoculated was in another shed, which was also locked ; this animal also was suffering from Farcy. Having examined the horse, and having seen it since, and inoculated another horse and donkey, he was able to swear that they

were now all three affected with Glanders.—Cross-examined : He considered thirteen or fourteen days after inoculation a proper test. Assuming that the matter with which he inoculated the donkey was impure, that might have produced suppuration. The glandered horse and the donkey both remained in the same building. The Glanders of the horse "Charlie" had increased, and it had a peculiar cough, quite distinct from that of Influenza, Sore Throat, or Bronchitis. The mare had swollen feet. He arrived at the conclusion that the horse was glandered, from the nature of the discharge, the ulceration in its nose, the duration of the discharge, adherence of the glands, and the enlargement of the jaw. He considered this to be a case of Chronic Glanders. He gave an opinion that a horse belonging to Mr. Eaton, of Bournemouth, was suffering from Glanders ; and two other persons who were called in said the same. It was perhaps three months ago that he made that examination. He had since seen the horse working on the beach, but he still believed it was Glanders from which it suffered. When he inoculated the donkey, he thought it likely the animal would be dead in a week.

Mr. G. J. Gould, veterinary surgeon, of Southampton, said he had examined the three animals that morning. He found "Charlie" suffering from Glanders in the severe and chronic form. The animal had about six or seven ulcerations in the near nostril ; they were plain to the naked eye. There was also an enlargement of the glands. The pulse was at 40, and the temperature at 101°. He had previously examined the horse on the 26th May for Mr. Ames, and the temperature was then 104°. In these infectious diseases there was always a variation of temperature. The donkey had Farcy buds on the neck, and the cart-mare was similarly affected, and showed symptoms of disturbed breathing. The mare had taken the disease in a more acute form than the donkey. The animals might live several days or weeks, but it would be cruelty to keep them alive. The average time which an animal lived after being inoculated as these had been was twenty-one days; but there were cases on record where they had lived weeks or months. Cross-examined : A horse with Chronic Glanders might live twenty years, and be capable of affecting animals around, who might take the disease in the acute form and die of it. The mare had Farcy buds on the neck, showed symptoms of disturbed breathing, and had fevered feet. Its pulse was at 68, and that of the glandered horse, "Charlie," at 40. This would not be accounted for by the mare's having fevered feet, but from its having the Glanders more severely than the other animals.

Mr. William Maynard, veterinary surgeon, of Romsey, was called on behalf of the defendant, and said he had examined the animals. He saw no difference in the condition of "Charlie" that day than on the 26th of May, except that the discharge was much less, and the horse was looking better ; its pulse was fuller. There was no ulceration of the mucous membrane of the nostril. The horse was better than when he saw it last, and it was his candid opinion that it was not suffering from Glanders. If the animal had been suffering from Glanders, the weather we had had lately would have increased them, the horse being shut up in a close place. He made an examination of the donkey. Where it had been inoculated an abscess had formed, from which matter was discharging. This suppuration might be caused without the animal being inoculated with Glander virus. He should have expected to have found Farcy buds had the animal been affected with Glanders. The time it usually took to cause the death of a donkey which had been inoculated with Glander virus was from four to nine days. The temperature of the animal was normal, and it was feeding well. If it had been inoculated with Glander virus, it must have died by this time. The mare had a swelling about the neck, and enlargement of the muscles ; but this might have been caused by the lancet

having been inserted rather deep, and the animal having to feed off the ground. He saw no ulceration in the nostrils of the horse "Charlie," but there was an abrasion. He noticed no difference in the mare's breathing. Neither of the animals were affected with Farcy. Cross-examined: The wound on the mare's neck doubtless arose from poisonous matter taken from the horse, but not glander matter.

Mr. Gould, in answer to Mr. Trevanion, said, with reference to the horse at Bournemouth, he concurred in the opinion that it was suffering from Glanders, and he was still of that opinion. It was three months ago when he saw it. It was working, but there was no inspector in Bournemouth now.

The magistrates retired for a short time, and on their return the Chairman (the Rev. C. J. Glyn) said they had fully considered the case, which was a most important one. Mr. Laidlaw was a man having an immense deal of property at stake, and they considered that as there were three gentlemen, all properly qualified veterinary surgeons, who had given their opinion that the horse was not glandered, and as there were two persons who were equally positive that the horse had Glanders, they must write to the Privy Council to send their regular officer down to give his opinion on the matter.

The case was then adjourned for a fortnight.

At the Wimborne police court, on July 7th, *Henry Laidlaw* was again charged with having allowed a glandered horse to be used on the highway at Lytchett Matravers, on the 7th of May.

The Chairman said the Bench was not constituted exactly as it was upon the last occasion, and asked Mr. Laidlaw whether he objected to the case being heard by the magistrates then present.

No objection was raised.

Deputy Chief Constable Hammond said the Privy Council had objected to send down one of their inspectors; they did so only in cases of Cattle Plague. A gentleman, however, who was perfectly independent in the matter, was present; he had examined the animals, and would give evidence.

Mr. Laidlaw objected to any other person than the Privy Council's inspector being called, no notice of the matter having been given to him.

Deputy Chief Constable Hammond wished to state that the gentleman he proposed calling was a perfect stranger to him, and a person with whom he had never had any conversation. This gentleman was a perfect stranger to himself, and also, he believed, to Mr. Laidlaw; and he (Mr. Hammond) had not accompanied him when he went to inspect the animals. As he could not get a man down from London, he had communicated with the Chief Constable, who had acted in this matter.

In answer to Mr. Laidlaw, Mr. Hammond said the serjeant of police accompanied the gentleman who made the inspection.

Mr. Laidlaw protested that notice should have been given him of this, and applied that the case might be adjourned for a month. The donkey and mare were each alive and well, although one of the witnesses had said the donkey could not live ten days. Mr. Laidlaw further said he objected to the evidence of the gentleman in question being taken.

The Chairman said the Bench would like to hear the evidence.

Mr. James Rowe, veterinary surgeon, of Dorchester, said he had been requested to visit some animals at Lytchett Matravers, and he had gone that morning and inspected them. He found a bay hack horse suffering from Glanders. He saw three animals altogether—the hack, a cart-mare, and a donkey. The hack was suffering from the sub-acute form of Glanders in an advanced state. He carefully examined the horse, and found a discharge from the near nostril, which, from the length of time the disease had been going on, had become thick. There was an enlargement of the sub-maxillary

gland ; it was detached, and not adherent to the jaw. He examined the lungs carefully, and found they were both extensively diseased. There were many spots of ulceration on the membrane of the nostril. The animal had a short, dry cough, and became distressed after exertion, its breathing being very bad. He had known horses suffering from Glanders to continue in this state for some time. He tested the horse's pulse ; it was at 45, or slightly above the normal state. The temperature was 101½°. In other respects the horse was looking fairly well.

Deputy Chief Constable Hammond : From your experience how long do you suppose this animal has been suffering from Glanders ?

Witness : It is a matter of months.

By Mr. Laidlaw : Keeping a horse suffering from cold or catarrh in a close stable during hot weather might produce Glanders. Glanders was caused by close stables, improper feeding, contagion, or inoculation. The close penning of a horse up during hot weather would conduce towards this disease.

Sir E. Greathed : Do I understand the horse has not been attended to ?

Mr. Laidlaw said it had not been allowed to be attended to for three weeks.

Deputy Chief Constable Hammond said this was wrong ; the only authority he had exercised was that of preventing the animals from being moved.

Witness said he found everything favourable to the horse living for some time ; there was plenty of fresh air.

Mr. Laidlaw remarked that this had only been during the last three weeks.

Witness proceeded to say he examined the donkey, and found a large ulcerated spot about half way down the neck on the left side, and a thickening of the glands down to the chest. They were very much enlarged, and very painful on pressure. Near the chest they were about half as large as his wrist. He should imagine the ulcer was caused by inoculation.

By the Bench : The result of inoculating a donkey from a glandered horse would be the same as what he saw in this animal, but the donkey had not taken the disease in the severe form. The disease would manifest itself about six or seven days afterwards.

Witness continued : The temperature of the donkey was 140° and the pulse 108. He believed the donkey to be suffering from Farcy. Farcy would produce Glanders by inoculation, and *vice versâ*. He thought a donkey inoculated with virus taken from a horse suffering from Glanders in the sub-acute form might live a long time. He thought the donkey in question would live for a long time yet. The only symptom it showed was Farcy, and he was of opinion that this resulted from inoculation.

By Deputy Chief Constable Hammond : The same appearance would not be produced had the donkey been inoculated with virus taken from a horse suffering from Influenza, and supposing the wound to have been deeply cut. He was most distinctly of opinion that the donkey had been inoculated from a glandered animal.

By Mr. Laidlaw : He came from Dorchester, and was a veterinary surgeon in large practice. He had inoculated a donkey himself, and at the end o seven days he had it killed. A donkey might live some time with the Glanders ; he had read of this case in the papers, but he had not felt particularly interested in it ; he had read the evidence, and he knew that morning that he was going to inspect the animals in question. He would positively swear that the cutting of the donkey too deeply, when inoculating, would not produce swelling of the specific form which he had seen.

Mr. Laidlaw : Would you be surprised to hear that one of your profession offered to lay a wager it would be dead in ten days after the inoculation ?

Witness: We are not supposed to be surprised at anything now-a-days.

Proceeding to speak of the cart-mare, witness said he found it suffering from Farcy in a very aggravated form. He counted twenty-eight Farcy buds; he did not reckon the small ones: eight of them were sloughing, and others were discharging. He did not think there could be the least doubt but that this was caused by inoculation with Glander virus. It was generally supposed that a donkey took inoculation quicker than a horse, but it was not so in this case. There was a bluish appearance of the membrane of the nostril, which indicated to him that the disease was assuming the form of Glanders. He thought the mare would become very badly glandered in a short time, and that it would not live very long.

By Deputy Chief Constable Hammond: He thought the animals ought not to be kept about, but that they should be killed. It would be more humane to kill them than to keep them about. He did not know exactly what amount of pain they were suffering.

By Mr. Laidlaw: There were three ulcers in "Charlie's" nostrils. He saw that the mare had been suffering for several months before from Acute Laminitis. He thought it was utterly impossible to say how long a glandered animal could live, for he did not think any one could arrive at a correct conclusion. He believed the donkey was feeding when he saw it. If a person anxious to make a good job of the thing in inoculating made a great wound in the neck, it would not cause ulceration, but there would be a sloughing wound.

Deputy Chief Constable Hammond asked if it would be necessary for him to prove that the witness was shown the animals in dispute.

Mr Laidlaw said he would admit this.

After a short consultation the Chairman said the Bench had given the case their very best attention, and upon the evidence before them they believed the horse was glandered, and they must convict. Of course they did not wish to convict in the full penalty, which was £20, their only object being to show their opinion that the animal ought not to have been used under the circumstances. They fined defendant £5 and costs.

Mr. Laidlaw said he begged to give notice of appeal.

The Chairman, in answer to a question, said the animals must not be removed.

Bryan *v.* Holden.

This was an action brought by the plaintiff, a horse dealer at Montgomery, to recover from the defendant, an ironmaster at West Bromwich, the sum of £180, the price of a pair of black horses sold to him in May, 1875. The action was tried at the Welshpool Summer Assizes last year, when a verdict was found for the plaintiff for the amount claimed; but on the application of the defendant a new trial was granted, on the ground of misdirection by the judge before whom the action was tried.

The case came on for trial at the last Chester Assizes, before Lord Chief Baron Kelly and a special jury. Mr. Swetenham and Mr. Marshall (instructed by Mr. E. M. Jones, of Welshpool) appeared for the plaintiff, and Mr. McIntyre, Q.C., and Mr. Coxon (instructed by Messrs. Caddick, of West Bromwich) for the defendant.

The plaintiff's case as to the sale of the horses being admitted by the pleadings, Mr. McIntyre briefly stated the case for the defendant, and called

Thomas Edward Holden, the defendant, who said: In the month of May, 1875, I was desirous of purchasing a pair of carriage-horses. On the 10th May I went to the plaintiff's, at Montgomery, accompanied by my brother,

and Smith, my groom. I went to the plaintiff's farm. Saw a pair of bays and a pair of black horses. The black pair were put into a break. Before they were put into the brake plaintiff said they were sound. While the break was away he said they were "a good, sound, honest pair of horses; one wanted more whip than the other." I bought them at £180. The horses arrived on the 12th. Smith went to fetch them from the station. When they arrived at home Smith called me to see them. The one seemed a bit distressed. The next day the horses were put into the carriage to go to Birmingham. When we got to Soho Hill one of the horses broke down, and we had to stop. We had a struggle to get to Hockley Hill. There we had to get out, and proceed to Birmingham by train. We left them at Mr. Howse's, at the top of Hockley Hill. Smith took the horses home. When I got home I noticed that the one that died first had got what I thought was Influenza. There was a slight running at the nose. I sent for Kendrick, the farrier. The horse died on the 17th of May. I went down to Montgomery on the 8th June. I did not see the plaintiff. The second horse fell ill in about a week or so. He fell away like the first. He was attended by Mr. Stanley, Mr. Collett, and Mr. Bradley. He was killed on the 13th July. I had a bay horse worth £60. He was kept in the same stable. Till the black horses came the bay never had anything the matter with him. He died of Glanders and Farcy. He fell ill at Llandudno. I had portions of the stable pulled down by the advice of the veterinary surgeons. The expense was £70. Mr. Collett's bill was £5 5*s.*, Mr. Stanley's £1 1*s.*, Mr. Kendrick's £2 9*s.*, Hollier, for painting, etc., £13, and £9 9*s.* for the keep of the horses, making, with the value of the bay horse, £164 4*s.*—Cross-examined by Mr. Swetenham: Had had previous dealings with plaintiff, and recommended Mr. Jordan to buy some horses from him. They came up in the same train. There were other horses in the same stable, and they could smell each other. Did not ask Bryan for a warranty. He said I could send them back if I liked. I did not go to look for another horse on the 15th of June. I went to see him about the horse that died. I was never shown another black horse, nor ever went to buy one. I did not mention the word Glanders to plaintiff. I did not say that he had warranted them sound until the action was commenced. I took his word. A few days after the arrival of the horses I started off into Wales with the bay horse, and put up at different hotels. Had a roan horse, which was put in the same stable. He is alive and well now.

Joseph Smith, groom, formerly in the employ of defendant: Recollected going to plaintiff's. Plaintiff said they were a good, quiet pair of horses. Understood him to say they were sound. Met the horses at West Bromwich station on the 12th. The larger of the two sweated much. The next day, when driving into Birmingham, could not get them along. They stopped at Soho Hill. Had to stop several times going up Hockley Hill. Noticed a running at the nose of a yellow cast. Had to walk the horses back. Saw the first horse after it was opened. The liver dropped to pieces. The lungs, the man said, were almost gone. Two or three days after the second horse fell ill. He had a running at the nose. Mr. Collett, Mr. Stanley, and Mr. Bradley saw him, and under their directions he was killed on the 13th of July.—Cross-examined: Had had a great many years' experience, and thought the first horse was suffering from Influenza. The second black horse fell ill before Mr. Holden came back from his tour into Wales.

Thomas Parsonage, groom in the employ of Mr. Allen: Went with Smith to the station. Noticed the larger of the two sweating a great deal, and he coughed several times in taking him home. Saw him on the following Saturday. Noticed he was swollen under the jaws and running at the nose. Saw the second horse after he was ill. Seemed to be the same as the first,

with running at the nose and swollen neck. By the same train Mr. Jordan's horses came up.

Phineas Kendrick, farrier, Wednesbury: Called in on the 14th May, 1875, to see the large black horse. Found him very ill, and told Mr. Holden it was a very serious case of Influenza. Attended him till the Tuesday, when he died. He had a great running at the nose, of a yellow, nasty, filthy stuff. He was swollen at the glands of the throat. He was swollen on each side very much, and there were three swellings under the jaw. He was breathing very hard. Had seen about two cases of Glanders.—Cross-examined: The swelling at the glands of the throat was one of the symptoms of Influenza, and breathing hard was another.

Philip Howse, saddler, Hockley: Saw the horses when they pulled up at Hockley Hill. One had a discharge from the nose of a yellowish-green cast.

Harvey Collett, veterinary surgeon, West Bromwich: Was called in to attend the second horse on the 6th of June. Did not detect the disease at that time. Treated it as a case of chest disease. He had afterwards a running at the nose and swelling of the glands. One of the hind legs became very much swollen, and ulcers formed on the swollen limb and then on other parts of the body. Told the groom it was Glanders. The horse was killed. It was suffering from Glanders and Farcy. Had heard the evidence as to the first horse. Was of opinion that he died from Glanders. From the state he was described to have been in he must have been suffering some time—from one to three months, possibly longer. The bay horse died of the same disease. The stable would be affected.—Cross-examined: The disease is one of the most infectious nature. The woodwork of the stable should be destroyed. The disease is communicated by letting horses drink out of the same bucket or eat out of the same manger. The colour of the lungs of the horse would depend on the stage of the disease. If it was rapid the lungs would be of a darker colour than normal; if slow, it would be more like its normal colour—pink. The disease is contagious previous to the external manifestations.

The deposition of Albert Bradley, of Dudley, veterinary surgeon, who was a witness on the previous trial, and who had subsequently died, was read. He said: "I have had considerable experience in relation to Glanders in horses. In July, 1875, I was sent for to attend Mr. Holden's horse. It was a black gelding. I found it suffering from disease. The disease was Glanders and Farcy. I should think the disease had been in the system a couple of months at least. I ordered it to be killed. It was cut open in my presence. I found the lungs badly diseased with Glanders. There were miliary tubercles in the lungs. They were of old standing. There were ulcers in the nasal chambers and nostrils. I found Farcy buds all over the body. I considered it the worst case I ever saw. The hair on the mane and tail tumbled out when you caught hold of it. This arose from diseased liver—a consequence of Glanders. There were glanderous tubercles in the liver. These appearances assisted me in determining as to the duration of the disease. The appearance of the tubercles in the lungs change. I can tell by their appearance whether the disease is of long standing. It was so in this case. In my opinion the horse could not have been sound when he was bought on the 10th of May. I consider the horse was suffering from Glanders on that date. I heard the evidence of Joseph Smith and Phineas Kendrick, given at Welshpool, as to the first black horse. The discharge at the nostrils, the swelling of the glands of the throat, and the lumps under the jaw described by them, are symptoms of Glanders. A horse in the condition described by such witnesses could not have been sound eight days before his death. I should think not for a much longer period.—Cross-examined: I should say the first horse had suffered from Glanders two or three months.

Glanders is a highly infectious disease. The disease is first contagious when the horse has the seeds of the disease first in the system, and before it has arrived at the acute stage. The disease is most frequently communicated by letting horses drink out of the same bucket, or eat out of the same manger, or be stabled close enough to smell each other by rubbing each other's noses. Anyhow in which they could get the discharge on the mucous membrane. Under all or any of these circumstances it is possible for the disease not to spread, but it is probable it would—highly probable. Upon my oath I can swear that the horse I attended on the 10th of July had the disease two months before. Glanders supervenes upon other diseases, on Influenza, but not often on Pleurisy; but when it does the symptoms are more aggravated than when it does not. Supposing a horse having Influenza to be improperly physicked, that would be likely to turn to Pleurisy, Congestion of the Lungs, or Glanders. If a horse were improperly physicked it would not alter the internal appearance of the Glanders so as to prevent my telling the duration of the disease."

The Judge's notes of the evidence given on the former trial by Mr. Stanley, veterinary surgeon, who has also died, were put in and read.

John Woodroffe Hill, veterinary surgeon, Wolverhampton, who had heard the evidence of the previous witnesses, and the depositions and Judge's notes read, was of opinion that the first horse died of Glanders, and the second horse of Glanders and Farcy. From the appearance of the body, as described, he had no doubt the disease had existed for three months. —Cross-examined: Had a large establishment at Wolverhampton where they stabled thirty horses. Was never at Mr. Bryan's stables. Glanders was more contagious than infectious. Supposing the horses were in loose boxes, and they smelled each other, a healthy animal might contract it from a diseased one by that means. Wood, especially if dilapidated, readily absorbed fluid matters. Wood absorbed the contagion. Horses using the same buckets was not the most frequent means of conveying the disease. The most frequent means was by inoculation. The padding in a railway horse-box would absorb any discharge if new, but the rule was that the boxes were cleansed. From what he had observed in sending and receiving horses, he knew they were. Supposing a horse with Glanders had been put into the same horse-box a week before these were, it would be liable to take the disease if the box had not been cleansed and there was any discharge; but the boxes could easily be cleaned with carbolic acid and water. Mr. Holden could not have disinfected his stable so easily, if the fixtures were not iron and were dilapidated, as a horse-box could be disinfected. He did not know the construction of Mr. Holden's stables. If he did he could tell whether it was necessary to pull them down or not. If there was no discharge there would be less liability to communicate the disease.

George Fleming, veterinary surgeon (2nd Life Guards), said he had heard the evidence given and read. Had had a great deal of experience of Glanders in horses. Was certainly of opinion that the second horse had died of Farcy and Glanders, and thought it very probable that the first had also. Was certainly of opinion that the disease existed in the first horse for three weeks, and in the second for not less than three months.—Cross-examined: The percentage of infection is from 25 to 50 of the horses exposed. From the period of exposure to the development of the symptoms the earliest period is about nine days, but that is exceptional—the usual period is from a month to six weeks. It depends on the state the horse is in at the time of the infection. A horse out of condition and weak would be much more susceptible of contagion. A dose of aloes would not produce Glanders. Glanders is undoubtedly a specific disease. The duration of Acute Glanders was from four to ten or twelve days. A person not well

acquainted with Glanders might mistake it for Influenza. There was every likelihood that the first horse died from Glanders. The running at the nose and the swelling of the glands were not inconsistent with Influenza.

Mr. Swetenham shortly stated the case on behalf of the plaintiff, and called

William Davies Bryan, the plaintiff, who said he attended Shrewsbury fair in March, 1875, for the purpose of buying these horses. Had known the horses from colts. He met Mr. Cotterill, who had purchased the horses. He bought them from him for £160, and took them home. He never saw the slightest indication of disease in the horses. It was correct that he did say, "They are a good sound honest pair of horses." It was said when he was showing defendant the different horses. There were forty-five horses in the stables. They were away in the brake for perhaps an hour. He never made the statement a second time. When they came back he saw Mr. Holden and the others look them over. He saw no indication of running at the nose. They never had anything the matter with them. Mr. Holden came to see him about the 25th or 26th. He wanted another horse to match the one that died. He did not show him another then. He came again a second time. He said nothing about witness having warranted the horse. Bought a horse at Rugeley fair. Mr. Holden came to him about the 16th or 17th of June. Witness saw him. He came about a match horse for the one he had got. Witness showed him a black horse. He did not purchase it, because it was too small. He did not complain of the first horse, or say anything about a warranty. After the horses were sent away other horses were put into the same stalls. They did not catch anything. About a fortnight before Mr. Holden came, on the 10th of May, Mr. Jordan had bought a pair of horses. They were kept under the same roof, in adjoining boxes, separated by wooden partitions. They could rub noses. They were sent by the same train to West Bromwich. The horses sold to Mr. Holden were shown to Mr. Hetherington about a fortnight before.—Cross-examined by Mr. McIntyre: Could not fix a date when Mr. Holden first came in May. He was there three times in May. Was absent from home in May. Was present at the trial at Welshpool. There was nothing said about Mr. Holden's going to see another horse. Mr. Holden did come to see witness in June about a match horse. John Evans was present. He was at Welshpool.

Thomas Cotterill, horse-dealer, West Bromwich, said he sold the black horses to Bryan. Bought them at Shrewsbury from Mr. Price on the 9th of March, 1875. At that time they were very healthy and good. Sold them the same day.

Edward Price, tenant to Mr. Jones, ex-Sheriff of Montgomeryshire, took the horses to Shrewsbury fair. Knew them well. Had bred one of them. Had known the other since it was foaled. They were perfectly healthy.—Cross-examined: Had had no experience with glandered horses. There was no running at the nose. Could not say that the seeds of the disease might not have been in them.

Thomas Jordan, ironmaster, West Bromwich, said he bought a pair or horses at the same time as Mr. Holden. They came by the same train. The horses were very good ones, and had been so.

Thomas Hetherington, jobmaster and veterinary surgeon, London, said they kept eighty horses on the premises. Remembered going to Bryan's in May, 1875. Saw two black horses, and examined them with a view to buying them. Examined their mouths. Saw no symptoms of disease. They appeared perfectly right and well. They were not old enough for him. Bought three or four horses from Bryan, which were well at that moment. One black horse he bought stood next to Mr. Holden's pair.—Cross-exam-

ined : The disease might exist a short time before there were any outward symptoms.

John Evans said he had been in the plaintiff's service the greater part of his life. Had to feed these horses. Saw no symptoms of disease. They were very good feeders. Had never seen Glanders on the premises. The horses sold to Mr. Jordan were in the adjoining boxes. There was an opening in the partition between the two which the horses could get their noses through, and had seen them do so. There were about twenty-one horses on that side of the yard, and they were watered in the same buckets. When he came back from sending Mr. Holden's horses away he put some other horses in the same stalls. He did not cleanse them. They were the horses that were sold to Mr. Hetherington. Recollected Mr. Holden coming once when Mr. Bryan was not at home. He came some time after. Could not say how long. Showed him a black horse once, but would not say when it was. Recollected Rugeley fair. Mr. Holden came after Rugeley fair. Mr. Bryan was present. Did not recollect what took place.

James McCall, Professor of Veterinary College of Glasgow, and Inspector for Privy Council, said he had attended carefully to the evidence. Had heard the evidence with regard to the first black horse. (By the Judge : And with regard to their fate when they came home, and also the evidence of Mr. Bradley and Mr. Stanley.) Was of opinion that the symptoms of the first horse were consistent with Influenza. The *post-mortem* appearances were consistent with death from Influenza. Did not think the first horse died from Glanders.—Cross-examined : The second horse was labouring under Influenza, and died from Glanders. Had heard the evidence of Mr. Fleming, who was a gentleman of great reputation, and well known in his profession. —By Mr. Swetenham : Did not think the first horse died from Glanders, because there was no mention made of the peculiar condition of the glands of the throat, which was characteristic of Glanders. They had always miliary tubercules in the lungs. Was of opinion that the first horse died from Congestion of the Liver.—Cross-examination resumed : Had heard the evidence that the lungs were almost gone. Heard what Kendrick said about swelling under the jaws, and had heard what was said about the liver. The second horse died from Glanders. Influenza frequently terminates in Glanders. Had had frequent experience of its beginning with Influenza and ending in Glanders. The horse might have been suffering from disease on the 12th May. From the evidence he should conclude that he was labouring under Influenza when he was bought. The liver and the lungs could have got into the same state in half the time.

James McGavin, veterinary surgeon, said he knew the horses sold to Mr. Holden. Knew the boxes in which they were kept. Had known horses watered from the same pump. The disease would necessarily have extended to the other horses. Had heard the evidence of Mr. McCall. Agreed with him in everything.—Cross-examined : The second horse died of Glanders.

The learned Judge left it to the jury to say—1st, was there a warranty? 2nd, if so warranted, were the horses sound horses?

The jury found a verdict for the defendant, and awarded him £8 15*s.* damages, and the price of the horses. This sum is the total of the sums he had paid the veterinary surgeons, and one of the items in the defendant's counter-claim.

Army Veterinary Department.

Gazette, July 31.

ROYAL ARTILLERY.—The undermentioned Veterinary Surgeons on probation, to be Veterinary Surgeons :—J. D. Edwards, F. Smith.

VETERINARY DEPARTMENT.—The undermentioned Veterinary Surgeons to be Veterinary Surgeons of the First Class : J. Kettle, 19th Hussars ; F. Duck, Royal Artillery.

Gazette, August 14.

2ND LIFE GUARDS.—Veterinary-Surg. of the First Class G. Fleming, from the Royal Engineers, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class T. Hart, deceased.

6TH DRAGOONS.—Veterinary-Surg. J. Findlay, from the Royal Artillery, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class W. B. Walters, transferred to the Royal Engineers.

ROYAL ENGINEERS.—Veterinary-Surg. of the First Class W. B. Walters, from the 6th Dragoons, to be Veterinary-Surg., vice Veterinary-Surg. of the First Class G. Fleming, transferred to the 2nd Life Guards.

SHROPSHIRE YEOMANRY CAVALRY.—Veterinary-Surg. T. Roberts resigns his commission.

Obituary.

THE death is recorded of Mr. Daniel Phillips, late of Penryn, who graduated May 19, 1826.

The sudden death, from an accident, of Mr. David Haig, M.R.C.V.S., of Shepley, Huddersfield, is reported. Mr. Haig was returning home at night on July 12th, from attending a patient, when his horse took fright at a large stone, and backed the carriage over a wall into a grass field,—a depth of nine yards ; Mr. Haig's neck was broken in the fall, and his body was not found until next morning. He graduated April 16th, 1869, and was much respected by a large circle of clients and acquaintances. He was a member of the Society of Friends.

Notes and News.

GLANDERS IN IRELAND.—The Irish Privy Council has recently repealed an order made nine years ago, in reference to the care of horses, mules, or other animals affected with Glanders or Farcy, and has issued a much more stringent one. One of the clauses of the new order directs that, when an animal dies of Farcy or Glanders, or is slaughtered because it suffers from either disease, the carcase shall be buried whole at least six clear feet below the surface of the place of interment, with at least one foot of roche or quicklime beneath the carcase, and two feet of such lime immediately above all its parts. Immediately before such burial, the hide or skin of the carcase shall be slashed or gored from the upper part to the extreme lower part by incisions through it of not more than six inches distant one from the other.

DOG TAX IN ENGLAND AND SCOTLAND.—From a return ordered by the House of Commons on the motion of Sir George Douglas, it appears that the number of dog licences taken out in England and Wales during the year

ending December 31, 1876, was 1,209,490, yielding in revenue £302,572 10*s.*; in Scotland the number was 152,686, yielding £38,171 10*s.* There were in England and Wales during the year 7696 prosecutions for keeping dogs without licence, instituted at a cost of £3515, and in Scotland 577 prosecutions, costing £372. In the year ending April 5, 1876, there were 407,072 dogs assessed in England and Wales, and 38,584 in Scotland ; the revenue accruing in the former country was £244,064, and in Scotland £23,109.

PORTABLE FOOD FOR HORSES.—The *Journal de Saint Pétersbourg* furnishes the following details regarding the preserved food for horses, prepared in the event of a scarcity of oats, or in case the transport of the food as used at present should prove too difficult. This food is composed of pounded oats and grey-pea flour, mixed with hempseed oil and salt. The paste obtained by this mixture is then cut up into thick cakes of about four inches in diameter, pierced with small holes to assist the soaking in water. On being taken from the oven these cakes are strung upon wires, so that each wire holds the daily ration for a horse. Each ration, of the weight of four pounds, is equal in nutriment to ten pounds of oats. It is stated that the horses are extremely fond of these cakes, whether soaked in water or quite dry ; and although when fed exclusively on these cakes they become thinner in appearance, they do not lose any of their strength, though hard worked.

HORSEFLESH.—During the first six months of 1877 the butchers who deal in this commodity in Paris have delivered to consumption 5283 horses, donkeys, and mules, which furnished 959,730 kilos. of meat (net). During the corresponding period of 1876 the number of these animals was 4422, which gave 803,500 kilos. The increase is, therefore, of a marked character. The persons who endeavoured to popularise the use of horseflesh affirm that it is more wholesome and more nourishing than beef, although often not quite so agreeable. Paris contains more than 50 butchers' shops specially devoted to this article. A very good pot-au-feu may be made with the inferior morsels at the price of 25 c. and 30 c. the lb. The choicest pieces—fillet, undercut, etc.—are much higher in their cost.

SERIOUS MORTALITY AMONG HORSES.—A mysterious epidemic, which has carried off Baron Rothschild's well-known horse Restitution, together with a valuable brood mare, has, according to the daily papers, caused the death of Favonius. The disease, which suddenly appeared in the Crofton stables at the commencement of August, appears to be Typhoid Fever, but both London and local veterinary surgeons have as yet been unable to ascertain the exact nature of the malady. Favonius was valued at £12,000.

TUBERCULOSIS IN CATTLE.—In Bamberg, a veterinary inspection is made of the live stock sent there for slaughter, from which an estimate is formed of the comparative frequency of disease in animals destined for butchers' meat. From the report of the local inspector published in the *Beiträge zur Veterinär-statistik*, it appears that of 5058 beasts, 6641 calves, 2791 sheep, 8614 swine, and 15 young wild boars, recently passing under his hand, 31 animals only were confiscated by the police. Between 1863 and 1876 the sale of 578 beasts was prohibited, 173 of which were suffering from Tuberculosis. Of these, 124 were between 1½ and 6 years old, and 20 between 6 and 10 years of age. The total number of full-grown beasts slaughtered within the period named was 49,894, so that the proportion in which Tuberculosis was present is one-third per cent. only.

ANTHRAX IN AUSTRALIA.—"Cumberland disease," it is said, is now affecting cattle and horses as well as sheep in New South Wales. Attention is being directed to the subject through diseased animals being brought to market.

Correspondence, etc.

ARE CLASSICAL EDUCATION AND SCIENTIFIC ATTAINMENTS TO BE CONSIDERED THE END AND AIM OF VETERINARY STUDIES?

To the Editor of the VETERINARY JOURNAL.

SIR,—It would appear to be the absorbing idea in the minds of some of those who aspire to the position of leaders of thought in our profession, that the grandeur and greatness of our future rests, not chiefly, but entirely on the high classical education and scientific attainments of all those who are to become one day members of our common profession.

It is a fact fully admitted, that education pervades all classes now to a much greater extent than was ever the case before; and for any learned profession to hold its own, it is obliged to be more and more profound in its knowledge. The immense value of the discoveries of scientific research—discoveries revealed by other discoveries previously made—none will deny; but I wish respectfully to suggest that it is not true wisdom to make it a hobby-horse, and to ignore the importance and the claims of that practical knowledge which all experience testifies to be of intrinsic worth,—nay, which is admitted on all hands to be of incomparably more importance in our special profession than any other kind of knowledge.

If by my possessing a classical education and scientific attainments, I am enabled to diagnose disease more correctly, and treat my patient better than the less educated man can, *then it must follow* that I can restore the sick and lame horse to usefulness and to health sooner and with more certainty. The public are never slow to discern this; and the natural result will, nay, *must*, follow, that the highest educated man will be the most sought after, will have the largest amount of confidence placed in him, and will have the largest practice in every town or country. Now, if this kind of education does produce these results, then I say by all means let the whole country be determined to have it; but if, on the contrary, there is any doubt about it, if experience shows that in the vast majority of such men when they come face to face with the world, when they have to grapple with the realities of life, to live by their profession, then they prove a failure,—when the Professors themselves condemn it in many of its aspects, especially as to materia medica, botany, etc., etc., and as one of its learned professors lately freely admitted to me that notwithstanding that we teach every branch of science which appertains to our profession much more deeply now than was ever done before, notwithstanding we have a much larger staff of teachers, have a greater number of subjects and lectures daily, besides private classes and private instruction, still I hesitate not to say that the average number of practical men we turn out now is not in the same ratio to what the average number was fifteen years ago. Now if this be true (and I feel constrained to believe it), then I say *there is something radically wrong in the method of teaching our student*, and it is our bounden duty to agitate, agitate, agitate until it is altered and corrected. Import a little more science into your teaching, eradicate a little more of the practical instruction, and in another fifteen years you will have none of the practical element in the education. Young men with such an education, having passed the requisite time at College, and having gained their diploma, will have to do as one of my fellow-students said nearly forty years ago—viz., he would go and buy himself a pair of phlemes and a searcher, and learn how to use them. Such a one might be a gentleman, and come up to the requirements of my friend Tom Taylor's caricature of an ornamental veterinary surgeon; he will have to practise

many years, and as our friend the late John Lawson used often to say, "such a one will have to fill many a field with carcases before he will have acquired sufficient experience to be fit to be entrusted to treat valuable horses." Let me ask, if a high education alone can make clever surgeons, must it not follow that the human surgeon must be clever? He is educated, as a rule, far higher than the veterinary surgeon; he has been instructed in anatomy, physiology, materia medica, chemistry and botany, to a far greater degree than we have; but yet, whenever he tries his hand with the horse patient, he can never diagnose disease or lameness correctly, and his treatment is always grossly at fault. The veriest stableman or horsekeeper of sense and experience is more correct in his opinion, and may with much more safety be entrusted with the care of sick or lame horses. The man who possesses a thorough practical knowledge and a sound education reaps the advantage of it throughout his after life; but the man who advocates classical education alone, and scientific attainment alone, in order to secure the highest attainable object of our noble profession, should be told, as Festus told Paul, "Thou art beside thyself; much learning doth make thee mad."

Yours obediently,

Manchester. THOMAS GREAVES, F.R.C.V.S.

HORSE DEALERS AND VETERINARY SURGEONS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In this month's *Journal* I see some remarks by Mr. Lambert as to the conduct of the Ashurst Lodge Company reserving the right to refuse examination by certain veterinary surgeons.—If oft-repeated report speak truly, they are not the only dealers who similarly object,—some of the London ones do so; and report goes further, and says that *certain* dealers approve very much of *certain* veterinary surgeons examining their horses, counting pretty surely of a successful passage through the process. All honour be given to those gentlemen who are outside the patronage of the dealers: it clearly tells its own tale, *unless* (and this brings me to your observations under "Correspondence"), the "unhealthy and incompatible combination" of horse-dealer and veterinary surgeon exists, then it can be well understood how the dealer should take objection to such a person. I trust, Mr. Editor, that when steps are being taken to protect our profession from impostors, similar ones may be adopted to strike off the rolls all members who so prostitute their calling. In conclusion, I think our Twickenham brother is to be commended for his candour, and I would suggest that all those who, like him, wish to, and do carry on the trade of a horse-dealer, but lack the honesty to announce it, should follow his example; they can then form a general "Lodge," and become a "buttering" Company, by which the objections to "certain veterinary surgeons" will be overcome, and *we*, who have some professional pride, may escape the taint of collision.

I am, Sir, your obedient servant,

HENRY DYER.

Knightsbridge, *August 1st*, 1877.

THE FELLOWSHIP DEGREE.

To the Editor of the VETERINARY JOURNAL.

SIR,—The letter from Mr. W. Furnivall, in your last month's *Veterinary Journal*, bearing upon the above subject, requires an indignant refutation

on my part, as to the "*favouritism*" imputed to the President of the Royal College of Veterinary Surgeons towards me. We are personally unacquainted, and have only met, to my knowledge, on one occasion—five years ago, when Colonel Fitzwygram was pointed out to me, but we were not even introduced. Is it not surprising that, after having received so high an education as Mr. Furnivall informs us he has, he should allow himself to entertain an idea so degrading; or that he should give vent to such rude and unwarrantable assertions regarding myself (a perfect stranger) as are conveyed in the last paragraph of his letter? Further comment is needless.

I remain, yours faithfully,

BENJAMIN H. RUSSELL, M.R.C.V.S.,
(Captain late 13th Bengal Lancers).

Grantham, *August 2nd*, 1877.

ANSWERS TO CORRESPONDENTS.

J. VAUGHAN. Leyh's "Handbuch der Anatomie der Hausthiere" is the text-book of some of the German schools. The second edition was published in 1859, and comprises about 600 pages, with 230 woodcuts. The latter are fairly good, and it is copies of them which illustrate Strangeway's "Veterinary Anatomy." The price, we think, is about twelve shillings. Zundel and Meynard published a French translation in 1870. Lecoq's "Traité de l'Extérieure du Cheval et des Principaux Animaux Domestiques"—the third edition of which was published in 1856—is, as its name indicates, a work on the external conformation of animals. It is very elementary, consists of about 500 pages, and has 155 good illustrations of the exterior of animals. The price is nine shillings.

Communications from several correspondents are unavoidably pressed out of this month's issue. They will appear in our next.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from W. G. Schofield, Pontefract; T. Greaves, Manchester; Hy. Dyer, London; W, A. Taylor, Manchester; J. Vaughan, Edinburgh; A. Johnston, Edinburgh; B. Cartledge, Sheffield; E. Decroix, Principal Veterinary Surgeon, Paris; W. H. Coates, London; J. D. Allman, London; Captain Russell, Grantham; J. Macqueen, Glasgow; J. T. King, Bournemouth; J. Cooper, Brighton; R. Moore, Sheffield; W. Dacre, Altrincham.

BOOKS: *M. H. Hayes*, Veterinary Notes for Horse-Owners: an Every-day Horse Book; Annual Announcement of the Montreal Veterinary College; Prospectus of St. Thomas's Hospital Medical School; ditto of Edinburgh Royal Veterinary College; *C. F. Müller*, Die Rinderpest in Deutschland Während des ersten Quartals 1877.

JOURNALS: *American Veterinary Review; Recueil de Méd. Vétérinaire; Archives Vétérinaire; Archivio di Medicina Veterinaria; Wochenschrift für Thierheilkunde und Viehzucht; Edinburgh Medical Journal; Practitioner; Lancet; British Medical Journal; Journal de Méd. Vétérinaire et de Zoötechnie; Revue Vétérinaire; Journal of the National Agricultural Society of Victoria; La Veterinaria Española; Thierarzt.*

NEWSPAPERS: *New York Sportsman; North British Agriculturist; Farmer; Mark Lane Express; Agricultural Gazette; Free Press; Melbourne Argus* (2 copies); *Melbourne Age; Daily Telegraph; Rod, Forest, and Stream; Rod and Gun; Chicago Field*; *New York Herald.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1877.

VERTIGO AND EPILEPSY IN THE HORSE.*

BY GEORGE FLEMING, F.R.C.V.S., 2ND LIFE GUARDS.

THOUGH derangement of the functions and disease in the structure of the nervous system—and particularly of the brain—are much less frequent in the domestic animals than in mankind, yet in some respects, and especially with regard to that most useful creature, the horse, they are well worthy the attentive study of the veterinarian. The less frequency of nervous disorders in animals, compared with their common occurrence in our own species, is undoubtedly due to the relatively smaller volume and limited activity of the brain and other nerve centres: the moral and intellectual faculties, which play such a large part in inducing cerebral derangements in man, being but little developed in them. Therefore it is that the idiopathic affections of the nervous system of animals are more rare than the local diseases of other organs in them, and consequently do not come so often under the observation of the veterinary surgeon. But as if to com-

* Read at the meeting of the Liverpool Veterinary Medical Society on January 19th, 1877.

pensate for this infrequency, and to compel him to study these maladies and derangements as closely as the physician who ministers to the mind diseased of mankind, the veterinarian is placed at a serious disadvantage—as is only too often the case in other instances—when compared with the latter. The signs which indicate disease of the brain are, in animals, chiefly those of a functional character, and we cannot resort to the ordinary direct means of investigation which the physician may avail himself of, and with such benefit to his patient and his own reputation. We cannot be informed, verbally, by our patients, as to their premonitory sensations,—whether they have spectral illusions, confusion of thought, are moved by fear or terror, or experience the strange surging auditory sensation so dreaded by epileptic patients, or that formicatory feeling as of an insect creeping on the limbs and body, and known as the *aura epileptica;* neither can we ascertain from them the extent to which vision is affected by the cerebral disturbance, nor test this still further by the modifications in the voice, etc. These valuable aids we cannot avail ourselves of; and, as with so many other diseases of animals, we must rely entirely upon a careful examination of them, and upon our own reasoning powers, in order to arrive at a correct diagnosis.

For instance, no one can deny that animals suffer from headache (*Cephalalgia*); but of its presence or severity we have no means of judging, save from the symptoms they present,—dulness, prostration, drooping head, oftentimes injected eyes, and a certain degree of irritability. Giddiness and delirium are only made known to us in an animal by sudden stopping, shaking of the head, or often furious, violent movements; more or less apparent loss of consciousness; indifference to injury, either from external objects or from its own efforts; partial or total loss of sight, heedlessness of surrounding objects, and difficulty in eating or swallowing. And in some brain affections we have to note the irresistible tendency of animals to push forward, even against such obstacles as a wall or barricade; more rarely to perform retrograde or circular movements, often or always in one direction. Not unfrequently, we observe that the movements of the animal are not co-ordinate,—that they are uncertain,

halting, and irregular, as if the creature were intoxicated. Somnolescence, coma, or drowsiness sometimes appear, and assist us in forming an opinion as to the nature of the brain disturbance; in other instances we witness convulsions, epileptiform seizures, or tetanic contractions of the muscles; and in others, again, we have paralysis, and more or less complete loss of sensation; while, though more rarely, in some cases we may have all the signs of cerebral apoplexy accompanying cephalic disease.

The difficulties in diagnosis of the disorders and diseases of the brain are, therefore, numerous; and nothing but experience, educated and careful observation, and a correct knowledge of the cerebral functions in health, are likely to serve the veterinary surgeon in this direction. The difficulties are greatly increased from the fact, that many of the phenomena which would indicate an idiopathic affection of the nervous system are sympathetic, and due, primarily, to disease or derangement of other, and even distant organs, independent altogether of constant anatomical lesions. Thus, loss of motor power and sensibility, convulsions, vertigo, etc., though they may point to the brain as their source, yet may be due to disease or derangement elsewhere.

They may also be originated by external agencies which act upon the nervous system, besides other organs, at the same time. Heat, foul air, severe exertion, indigestion, animal or vegetable poisons, narcotics, alterations in the composition of the blood, etc., all act in producing either disease or disturbance in the nervous system, as well as in other organs.

It is sometimes exceedingly difficult to distinguish, from the symptoms, between primary alteration or disease in the nerve substance, and that which is secondary, or consecutive to changes in adjoining organs—such as the envelopes of the brain or spinal cord. More particularly is this the case with functional disturbance, in which, though symptoms of brain disease are apparently well marked, yet pathological anatomy does not furnish us with any sufficient indications of material alteration in the nerve-tissue to account for them.

There are certain groups of symptoms which, appearing under particular conditions, may give rise to suspicion as to the existence of a material alteration in the brain—such as sudden attacks of

vertigo, followed by permanent and complete hemiplegia, partial paralysis, convulsions, accompanied by loss of consciousness, epileptoid seizures, etc.; but yet we find these symptoms present in exceptional cases, and nevertheless no cerebral lesion can be discovered after death,—proving that, though in the majority of instances they may be pathognomonic of material alterations, yet there is nothing absolutely certain about them. It has also been pointed out that there is a number of pathological conditions which do not appear to be due to encephalic lesions—such as chorea, hysterical nymphomania, and that state which has been designated "immobility"; but in which we, nevertheless, sometimes find alterations after death that were not suspected during life.

So that neither in human nor in veterinary medicine is there any particular means by which we may distinguish, in many disorders of the brain, whether or not there are any definite lesions; and the collective symptoms, with their mode of evolution, are all that we have to guide us in hazarding an opinion as to the presence or absence of alterations in that organ.

It has often been attempted to establish, by particular signs, the lesions in different parts of the brain; but after ulterior observations, it has been concluded that the anatomical diagnosis of a disease of this part, in only too many cases, cannot be exact or trustworthy. Congestion, inflammation, effusion, and the presence of entozoa in the brain, can certainly be often distinguished during life; lesions of the cerebrum can frequently be differentiated from those of the cerebellum, by the symptoms presented while the animal is alive; and yet we not rarely find extensive changes in these, on *post-mortem* examination, without any adequate reason for suspecting their existence before death.

It has been sought to distinguish disease of the envelopes of the brain from those of the brain-tissue; and it has been admitted that in the latter there is generally slow and progressive paralysis, and a derangement in locomotory power, which is not present in simple affections of the membranes; but this is not constant, and inflammation of the brain-tissue has been found after the death of animals which exhibited no sign of paralysis. Only too frequently, it is not until after functional disturbance has been

going on for some time, that an apparent anatomical alteration is developed.

The symptoms of nervous diseases are chiefly those of a functional character, and are marked either by excess or deficiency; not unfrequently they are intermittent, notwithstanding that the lesions may exist during the intermittent periods when the symptoms are absent. Sometimes disease appears suddenly, and then the symptoms are more marked; but when it is developed slowly and gradually, no symptoms may be manifested until a certain stage has been arrived at. In some of the diseases progress is rapid, and in others—by far the larger number—it is slow.

The complex organisation of the brain and nervous system, as we have seen, opposes a barrier to anything like an exact knowledge of its pathological states being obtained, and which has not to be encountered in investigating the morbid conditions of the other systems of the animal body. And these pathological states are numerous; for not only do we have particular neuroses of the nervous centres, but there are also inflammatory and congestive conditions of these, impaired nutrition affecting them, diseases due to particular diatheses, congenital anomalies, altered relations, tumours, traumatic lesions, and the changes or disturbance produced by helminths, etc.

We have also disturbances due to certain conditions to which these centres are exposed—such as hyperæmia—produced in various ways, but often in the brain when badly-fitting harness offers an obstacle to the return of the blood from that organ; disease of the envelopes; effusion of serum on its surface or in its ventricles; alterations in the bloodvessels; compression by tumours or fluids, etc.

So that, in reality, in studying the diseases of the nervous centres, we have to take into consideration a large number of influences, one or more of which, either by acting directly or sympathetically on this most intricate organisation, may give rise to a diversity of morbid manifestations, the exact nature of which it is often difficult, if not altogether impossible, to determine in our present state of knowledge. We will select two maladies to illustrate this position, as they will afford us a good idea of the

difficulties surrounding the subject of nervous derangements in general. These diseases are Epilepsy and Vertigo.

Epilepsy affects all the domesticated animals—even fowls; but it is perhaps most frequent in the dog. It is characterised by a sudden attack of convulsions—marked by clonic spasms of the voluntary muscles, when either in or out of the stable or dwelling—more frequently when out of doors; and a more or less complete paroxysmal loss of consciousness and sensation, which, in the great majority of cases, causes the animal to fall. The attacks appear after variable intervals, perhaps a month or more, during which the animal may not offer any indication of ill-health.

We have said that the attack is sudden, and generally it is so. But, nevertheless, in some instances there are premonitory symptoms—such as restlessness, tremblings, agitation; the horse may emit a shrill scream or groan; the dog will give a howl or cry; the ox will bellow as if afraid; then the animal will stagger for a few steps, placing the limbs wide apart as if to prop up the body, and soon fall heavily, as if shot and deprived of sensation; general convulsions—clonic, then tonic—agitate the whole frame, but chiefly the head, neck, and limbs; the eyelids are more or less apart, and the eyes are prominent and haggard, and roll about in their orbits in a most remarkable and characteristic manner; the pupils are usually widely dilated, and insensible to the stimulus of light; the conjunctivæ are injected, and the eyelids more or less closed; the hair is erect; the head is repeatedly raised and dashed against the ground; the jaws may be spasmodically closed, and the tongue fixed between the teeth, or the lower jaw may be moved from side to side, and the teeth ground against each other; a foamy—often sanguinolent—saliva flows from the mouth; the nostrils are widely dilated, and the upper lip frequently everted upwards; the respiration is sighing, jerking, and anxious, with abrupt expirations; and sometimes the horse moans, the dog and pig emit plaintive cries, and the ox bellows. At the crisis of the attack, the limbs are rigidly extended and moved about in a convulsive manner; the thoracic and abdominal muscles participate in the convulsive contractions; the flanks are drawn up; and tetanic spasms vary the convulsions. The body is covered with perspiration; the jugular and superficial

veins—especially those of the head—are greatly distended; the pulse is small, slow, and irregular in its beats, or it may be strong and tense; while the heart's contractions are energetic and bounding, at other times scarcely perceptible.

Gradually the tonic contractions give place to those of a clonic character; the convulsions diminish, perhaps affecting one side more than another; often fæces and urine are passed involuntarily; then tranquillity ensues; consciousness and sensibility return; and the animal, with a stupid, feeble stare, attempts to rise. This it at last succeeds in doing, and it may seek for water and food; but for some time it remains weak and prostrate, and the expression of its eye shows that it is ill at ease. It is often observed that the dog, as soon as it is able to get up, runs away, as if hotly pursued by some one.

The seizure may last for only a few minutes, or it may continue for more than a quarter of an hour: the period depending generally on the duration of the disease and the number of attacks. It may happen that an animal will have two or three seizures within as many days, and then a long interval will elapse before they recur. With the pig and dog the attacks are generally more frequent, sometimes only an hour or two intervening; and death may rapidly ensue in these animals—apparently from suffocation; though Epilepsy rarely leads to a fatal termination in horses or cattle.

The creature does not, in every case, offer all the symptoms just enumerated; sometimes the standing attitude is maintained throughout, or until near the end; in some instances the animal leans against some support, and the muscles of the face, head, neck, and trunk are more or less convulsed, but the limbs are not so affected; on the contrary, they are spasmodically extended and held wide apart, the creature staggering about until the body meets something to rest against. This comparatively slight attack corresponds to the *petit mal* of the French physicians, a somewhat remarkable instance of which recently occurred in my own experience. An aged carriage-horse belonging to Major L., instructor in field works at Chatham, had been attacked for a long time, and at irregular intervals, with what the coachman termed "Staggers." The attacks did not take place in the stable—at

least, the animal was never observed to be affected there—but only when in harness; and the seizures were becoming more frequent and serious. Not being quite satisfied with the coachman's description of the symptoms, I drove several times with him, but was unfortunate in not witnessing an attack. One day subsequently, when in double harness, and some distance from home, the horse was so alarmingly affected that it was decided to destroy it, as fears were entertained of dangerous consequences. When being led from the stable to the place where it was to be killed, strange to say, it had a most severe attack in my presence. The symptoms were suddenly developed, and were of a very startling kind. The animal did not fall, but began to stagger about, the limbs being rigid and stuck out like props. This staggering continued until a wall was reached, against which the animal leaned. In the meantime, the facial muscles were convulsed; the nostrils were widely dilated; the ears moved to and fro rapidly; the upper lip was frequently everted; the jaws were champed continuously together, and the mouth was soon filled with foam; the respiration was almost spasmodic; and the tail was erect, and quivered. During the paroxysm, defecation occurred twice. The number or character of the pulse could not be ascertained, because of the convulsive movements. The attack lasted nearly a quarter of an hour, and towards its termination the breathing became deep and almost sighing; there was a flow of urine; consciousness—which had been partially suspended—gradually returned, and the animal could then be moved to the place of execution; though it had a most dejected, woe-begone expression, and was very torpid in its movements. It was destroyed by insuffiation in the jugular vein, and a most careful *post-mortem* examination was made. Nothing abnormal, however, could be detected, except marked anæmia of the brain and medulla oblongata, the lumen of the larger arteries of which appeared to be considerably diminished. The brain tissue itself had a peculiar yellowish tint, and it was more dense than usual.

The attack of Epilepsy, as has been said, varies in extent and severity. It may only affect the muscles of the jaws, neck, shoulders, and fore-limbs; or the eyes only may *pirouette* in

their orbit, and the eyelids and lips move convulsively. Cases have been described in which there was only jerking of the head, spasm of the muscles of the lower jaw, rolling about of the eyes, grinding of the teeth, and a small quantity of foamy saliva about the lips. It has been remarked, however, that this partial Epilepsy especially occurs during work, and recurs more frequently than the serious attacks. In a chronic form, animals liable to Epilepsy may live for years; but if they do not eventually succumb to accidents or injuries inflicted during the attacks, they usually lose condition, become feeble and dejected-looking, and assume a kind of imbecility or idiotism. Or death may take place after a few attacks, and be due to cerebral apoplexy or asphyxia.

Recovery has been known to take place, as it were, spontaneously. Jessen gives an instance in which a horse had a seizure every time the stable door was opened, and some of these attacks lasted for nearly an hour; on one occasion, it had fourteen minor attacks in four hours; for ten days it could not stand, but it quite recovered eventually.

Schrader alludes to a horse which had been epileptic for six months, the attacks numbering at last as many as nine a-day, and being excited by the least noise. A state of torpor supervened, and as this gradually disappeared, so did the seizures, and finally the animal got well. And Nickerle cites the case of another horse which, for several days, had many attacks,—as many as two in the hour,—some of them lasting a quarter of an hour. Notwithstanding the extreme prostration into which these seizures brought it, it recovered.

Nevertheless, we have often to note the fact that the malady is incurable. With the horse it is at least dangerous, as it may be seized at a moment when those who are with or about it will incur risk of injury.

With regard to the pathological anatomy of Epilepsy, no constant lesions indicate its existence, and nothing positive as to the seat or nature of the affection can be learned. The alterations observed in man and animals have been so numerous and varied in many cases, and as entirely absent in perhaps more, that we may safely say it has no particular pathological lesions to characterise it.

In some cases the brain may appear quite healthy, in others we find hyperæmia, or hæmorrhage when death has been due to apoplexy; in the dog, acute or chronic œdema and softening of the brain have been observed; in horses, effusion into the lateral ventricles has sometimes been noted; while alterations in the texture of the cranium, the membranes enveloping the brain, and in the texture of the brain itself, have been in some instances ascribed as the determining cause of the disease. Anæmia of the brain may be present, and constitute itself the cause of the malady. In the instance we have just given, it was the only unusual feature present. That anæmia of this organ will give rise to epileptoid symptoms, is a matter of ordinary observation in those cases in which animals die from hæmorrhage.

But it may be fairly asserted that nothing in the pathological anatomy of the disorder has been found to explain, in every case, the occurrence of the paroxysmal seizures, which are evidently due to stimulation of the motor nerves proceeding from or through the medulla oblongata; nor the paralysed condition of the cerebrum, which leads to loss of sensibility and consciousness.

The epileptic seizures would appear to depend primarily, and more particularly, on some kind of irritation of the medulla oblongata; but we cannot explain how or why the other nervous centres are involved. Schrœder Van der Kolk, who appears to have studied the disease somewhat closely in mankind, was of opinion that the first cause of Epilepsy consists in an exalted sensibility and excitability of the medulla oblongata, rendering this part liable to discharge its force in involuntary reflex movements, on the application of irritants which excite it; and that this irritation may be external (operating on the fifth pair of nerves), or in the brain or intestines. In the commencement there is only exalted sensibility, which may be removed and a cure effected; but when the malady has been in existence for some time, organic vascular dilatation occurs in the medulla, too much blood is supplied, and the ganglionic system of nerves is greatly irritated. Every attack increases the mischief, by promoting the vascular dilatation. Moreover, increased exudation of albumen ensues, it is stated, from the constantly

distended vessels; the coats of these become thickened, the medulla is gradually hardened, and fatty degeneration, softening, and other pathological changes occur.

The causes of Epilepsy are described as numerous. They are enumerated as follows: hereditary predisposition, species (as the dog, which appears to be most liable), breed, temperament, youth, and state of perfection. As occasional causes, we have fear, bad treatment, plethora, the period of œstrum, immoderate exercise of the genital organs in the male, worms in the intestines or frontal sinuses, second dentition, irritation of the skin, an inactive life, mal-hygiene, etc.

There can be no doubt that Epilepsy may be due to irritation of a nerve, and that it may exist without any serious organic change in the nervous centres, constituting what Brown-Séquard has designated "reflected Epilepsy." This authority discovered that, in certain animals, irritation of the sciatic nerve by a broken bone, or by some other causes—crushing, tying, or cutting,—invariably produces a temporary or persistent Epilepsy; and that this convulsive affection never disappears without treatment, unless the irritation has ceased in the sciatic nerve. Brown-Séquard is of opinion, that of all the nervous and other complaints that may be due to an irritation starting from the trunk, branches, or ultimate ramifications of nerves, very few, if any, are more frequent than Epilepsy. Reflected Epilepsy is not at all uncommon in animals, and a case is recorded in which an attack could be produced at will in a horse, by merely pressing on a tumour situated in the parotideal region.

With regard to *Vertigo*, we have a similar condition, so far as the loss of consciousness and sensibility is concerned, in the majority of cases; but it differs from Epilepsy in the absence of convulsive movements, and also, to some extent, in its causes. It might be inferred, from the difference in the symptoms, that Vertigo was more particularly limited to the cerebrum, and was largely dependent upon the condition of the circulation in that portion of the nervous system; while Epilepsy was a disordered condition—functional or organic—of the medulla oblongata, in which reflex action played a large part.

The symptoms of "Vertigo," "Megrims," or "Staggers," are

familiar to every one who has had much to do with animals or the treatment of their diseases.

It is observed most frequently in the horse, and much more rarely in other animals. In some parts of Germany it is almost enzoötic in the equine species.

It is characterised, in some cases, by periodic attacks, like Epilepsy, when it is idiopathic; and it very often accompanies other diseases or derangements of organs, disappearing with them, or remaining after they have been cured. Vertigo or delirium may also appear as a consequence of over-repletion with food; the ingestion of poisonous substances; plethora; confinement in close hot stables, on shipboard, or in railway carriages; retarded circulation by badly-fitting harness; disease of the heart or bloodvessels; a high temperature; great altitude; sudden changes of temperature; or abrupt transition from light to darkness, and *vice versâ;* long-continued movements in a circle: whatever, in fact, may tend to disturb the circulation of the blood in the brain, the lungs, or the heart.

The exemption, to a large extent, of the ox and sheep from Vertigo, due to disturbed circulation, while the horse and dog are very liable, may be owing to the presence in the former of the *rete mirabile*, which is so admirably disposed to prevent engorgement of the brain with blood. In order to perform its functions properly, this organ demands a large supply of blood, which is abundantly furnished by numerous large-sized arteries; while the uniform distribution and force of this fluid is pretty well ensured by the tortuosity and anastomosing arrangement of these vessels, in what has been designated the "circle of Willis," and their breaking up into minute capillaries in the *pia mater*. The bony channels through which some of the vessels pass, also, doubtless tends to limit their distension, and to equalise the blood pressure in the cranial cavity. A similar peculiarity is observed in the veins in this part, and which, forming large trunks or "sinuses," whose walls are composed of dense fibrous tissue, are almost incapable of distension or compression.

The brain is, therefore, to a great extent, almost incompressible, owing to this arrangement of its vessels, and its being placed within rigid bony walls.

The ox and sheep have, as has been just said, an additional safeguard against arterial congestion, in the wonderful plexus and interlacement of vessels at the base of the brain.

But it has been proved experimentally that, although the total volume of the contents of the cranium is probably nearly always the same, yet the quantity of blood in it is liable to variation with every beat of the heart and every act of respiration; and there can be no doubt that it also varies under many other circumstances, and that alternations of excessive and diminished pressure in the unyielding bony case, and which would prove most injurious to the functions of the brain, are provided for by the presence of the cerebro-spinal fluid in the cranium and spinal canal. This fluid, as has justly been observed, not only serves the office of fat in other regions, as a "packing" material, but by the readiness with which it can be displaced into the spinal canal from the cranial cavity, it provides the means by which undue pressure and insufficient supply of blood are equally prevented.

This is undoubtedly the case under normal circumstances; but from idiopathic, occasional, or other causes, this equability in the cerebral blood-pressure may be deranged, and then we may have either anæmia or congestion of the brain or its membranes, which will give rise to single or recurring attacks of giddiness. Alterations in the density of the blood or in the contractility of the arteries, or defects in the arrangement or pathological changes in the coats of the latter, may lead to an increase of pressure in a part or over the entire mass; derangement of the circulation in the respiratory, digestive, biliary, or other apparatus will also more or less influence the circulation in the brain; while an alteration in the quality of the blood will bring about disturbance in the nutrition of the organ.

We do not deny that, in some cases, an alteration in the tissue of the brain itself may be productive of Vertigo; but we confess that we are more inclined to look upon it as, in the majority of instances, depending upon either disturbed nutrition or deranged circulation. The symptoms go a long way to prove this.

The attack of Vertigo is usually sudden, and generally occurs while the animal is at work in harness, and not unfrequently

when it has been made to travel soon after feeding. It rarely indeed occurs in the saddle, or while the horse is in the stable. The severity of the attack varies. Sometimes it is limited to momentary vertigo—to sudden pulling up, shaking the head, turning it to one side, or throwing it up, as if gazing at the sky; stumbling or staggering, either against the next horse if in double harness, or against a wall or other prop; or it turns in a circle, hangs in its harness, looks anxious, perhaps retrogrades, and is soon covered by an abundant perspiration. If gently spoken to, kept quiet, held by the head and supported, the giddiness passes off in a few minutes without the animal falling; it soon assumes its wonted appearance, and proceeds on its journey without another seizure. In more severe cases, however, the horse staggers and falls, and remains lying unconscious for some time: the breathing being deep, the temperature of the body normal, and the pulse not much affected; while the eyes are insensible to light, and in some rare cases there may be disordered movements of the limbs *(Epileptic Vertigo)*. These are usually cases in which the attacks have been often repeated, as the malady is generally progressive. Indeed, the first indications of the commencement of this condition are usually so slight as to escape suspicion, and are limited to a peculiar side-shaking of the head, as if an insect were in one of the ears, with perhaps a slight deviation from the straight course; in a few seconds this has passed off, and the animal gives no further indication of giddiness. A curious feature in momentary vertigo, is its occurrence, in many cases, on particular roads, and nearly always at the same place. A horse of my own presented this peculiarity, being attacked nearly every time it arrived at a certain part of a road.

Abdominal vertigo, or "Stomach," "Grass," or "Mad Staggers," is another form of this affection, caused by indigestion, and in which there are bilious symptoms. In this form there is usually at first torpor or coma, the animal pressing forward against the wall of the stable, and reeling about, with indications of nausea. In some cases vertigo, or delirium of a furious kind, may ensue, from extreme congestion and effusion on or in the brain, or from sympathetic influences.

In many cases of Vertigo, recovery occurs; in others, curative treatment is impotent. These results depend upon the causes which give rise to the symptoms, their persistency, or the pathological changes they may produce. But into the treatment of these disorders we need not enter, as this will necessarily vary, not only with each case, but also with the stage at which we may find it.

Removal of the predisposing or exciting causes must, of course, be our object, when they can be ascertained. But in many cases of Vertigo, and especially those of a chronic nature, the prognosis will always be guarded, and must indeed be generally unfavourable. When it is due to improper feeding or bad stable management, then this should be amended; indeed, proper and seasonable feeding, working, harnessing, and good hygiene, must be the first consideration in every case.

The therapeutical indications will depend upon too great a variety of circumstances to allow us to touch upon them here.

PHYSIOLOGICAL AND THERAPEUTICAL NOTES ON CHLORAL HYDRATE.

BY JOHN DOWLING ALLMAN, CREECHURCH LANE, LONDON.

SINCE the introduction of chloral as a medicine by Liebreich, in August 1869, few remedies have met with such success, nor has there been any drug which has occupied the attention of physiologists and men of research so much, as chloral. Most men of science and of any note, who are connected with medicine, have fully investigated the physiological and therapeutical value of this drug: and I venture to presume that the numerous notes I have made respecting this popular remedy are worth recording in the pages of the *Veterinary Journal*, especially as it has been in use in veterinary practice for a few years. A detailed account as to its physiological, chemical, and therapeutical action may therefore be of interest to the readers of the *Journal*.

Chloral hydrate is a very volatile crystalline solid, possessed of a hot burning taste, insoluble in cold chloroform, but very soluble in water and alcohol. It occurs generally as transparent

colourless tablets, but sometimes in acicular, or even in rhomboid crystals,—the compound of chloral and alcohol. If an alkali be added to a solution of chloral hydrate, it breaks up into formic acid and chloroform, which, when water has been the solvent, at once separates in the form of oily drops.

Physiological Action. When given internally, in moderate doses, to man or other mammals, the most conspicuous sign, in the majority of instances, is quiet sleep, resembling natural sleep as nearly as possible. The patient can easily be aroused from the lighter degrees of this, waking nearly to full consciousness, but soon dropping off again when left quiet. The pulse is in this degree of action not altered, or is rendered slightly slower; the pupil is contracted, but becomes normal as soon as the subject is awakened; the respiration is deep, full, and regular. When larger quantities are given, the sleep is much heavier, and sometimes passes into profound coma; the respirations fall in number; the pulse becomes weak and slower, but may grow rapid and irregular if the dose has been toxic; the temperature is lowered; the muscular system is relaxed, and both sensibility and reflex action are diminished. If a poisonous dose has been given, all these symptoms just mentioned are increased, with coma, intense muscular relaxation, weak thready pulse, pupil contracted at first, afterwards dilated, and the animal sinks into death paralysed and anæsthetised.

The immediate cause of death is a paralytic arrest of respiration, and in many cases, there being a simultaneous arrest of the cardiac action, it is thought that fatal syncope may at times occur. At *post-mortem* examination, congestion of the meninges and substance of the brain and cord, and of the lungs, is commonly found. Dr. Richardson has noticed that the blood coagulates less firmly than when normal (*Medical Times and Gazette*, Sept. 4, 1870). The most conspicuous symptom produced by small doses of chloral, is sleep, and this may be attributed to its direct action upon the cerebrum. In most cases it is quiet, but it sometimes is restless sleep, and in man has even occasionally been wildly delirious; but it is considered that this latter condition may be attributed to impurities of the drug. Demarquay says that hyperæsthesia very commonly

follows the exhibition of small doses; Bouchut, Dieulafoy, and Krishaber (*American Journal of the Medical Sciences*, Jan. 1870), confirm this; whilst Liebreich and Lubbe deny it, and Hammarsten, who has noticed it, is inclined to think it apparent rather than real. This hyperæsthesia seemes to me most probable, and must be acknowledged; for Rafewsky, after making some very elaborate experiments, recognises it, and also states that there is in frogs a corresponding over-excitability of the reflex centres; he also noticed in rabbits a glowing heat borne without much complaint, while pinching would produce violent outcries. The experiments of Demarquay prove that, when chloral has been administered to animals, there is evident enlargement and engorgement of all their bloodvessels; and Rafewsky states that he has found sinking of the blood pressure in rabbits from small as well as large doses of the drug. In man, Bouchut discovered sphygmographic traces, which he thinks indicate a primary increased arterial tension. However, it seems to be an established fact, that both in man and mammals, by large doses of chloral the blood pressure is very much lessened, probably owing to vaso-motor paralysis, but in a greater degree to action of the drug on the heart.

An experiment of a large dose of chloral, ℥iv., on a horse, and which I think worth recording here, is quoted by Dr. Burness and Mr. F. J. Mavor, M.R.C.V.S., in their work, "The Specific Action of Drugs," p. 31:—

"At 11 o'clock ℥iv of chloral in water was administered to a horse; and almost as soon as swallowed, whilst his mouth was being washed out, he suddenly fell down insensible, sighing frequently and perspiring freely; the pupils were fully dilated, all the muscles relaxed, complete anæsthesia of the whole body. Twenty minutes after, the pulse was 50°, feeble—in fact, almost imperceptible. At 11.30 the pupils were smaller than normal, the pulse was 48°, and stronger, the horse was coughing at intervals, breathing was heavy, quick and spasmodic. Shortly after he sank into a quiet sleep; at 12 o'clock the breathing was short and quick, and the anæsthesia was passing away. At 12.30 he was awake, coughed, and discharged a quantity of thick white creamy froth through the nostrils; also passed dung. At

12.35 attempted to rise, but had little or no power over his legs; sighing still at intervals. At 12.45 again attempted to rise, but failed. At 1 p.m. pupils dilated, sleeping; breathing slow and heavy, relaxation of sphincters of bladder and rectum, passing urine and dung, skin cold. At 1.20 urine dribbling away, dung at anal opening, but no power to expel. At 3 p.m. restless, disposed to feed, shivering. At 4 p.m. he was on his feet, eating and moving about, still shivering, coat staring; at 6.20 still the same. Next morning he was suffering from Bronchitis, mucous discharge from nostril, and moist mucous râles distinctly heard all over chest: he was quite recovered in a few days. Now it is evident from the symptoms in the above case, that the horse was suffering from chloroform; the chloral being mixed with a large quantity of water, was at once absorbed, and decomposed into chloroform and formic acid. Moreover, the smell of chloroform was perceptible in the stable, and the symptoms were parallel to those which would be produced by an over-dose of chloroform."

Dr. Burness and Mr. Mavor, not having carried their experiment further, the chloroform theory is open to doubt; and I should like to see some one make a better research regarding this very important point. It is in their favour, however, to mention that the conversion of chloral by alkalies in solution into chloroform and formic acid first suggested its use in medicine to Liebreich; and the theory that its action is really due to chloroform generated by the alkalinity of the blood has been endorsed by Personne and other writers. The evidence by which this theory is to be discarded or acknowledged is twofold in its character—*i.e.*, chemical and physiological. Personne (*Journal de Pharmacie et de Chimie*, 1870), by distilling the blood of animals poisoned by chloral at 40° C.—a temperature decidedly above that of the body—obtained chloroform; and his experiments have been confirmed by Pellogio and other chemists; so that the chloroform theory has to a great extent been proved. They are, however, open to doubt; for it is very possible that the chloroform may be formed during the distillation, owing to the comparatively high heat employed. This evidence must therefore be left an open question, especially as Hammarsten

has found that if chloral be mixed with fresh blood, and streams of carbonic acid be forced through it, no chloroform can be detected; but if the mixture be heated, the latter can be obtained in abundance.

Hammarsten, carrying his experiment further, examined the expired air and a portion of the blood of dogs poisoned by chloral, and could not detect chloroform; although when a clyster of the latter substance was administered, it could be detected in a few minutes, in both the blood and the breath. Now, in non-chloralized animals to which similar enemata were given, the chloroform could be detected in the breath before anæsthesia was induced.

Rafewsky has confirmed these beautiful experiments, as has also Amory (*New York Medical Journal*, 1870); so that it may be considered settled that chloral mixed with blood at ordinary temperatures remains unaltered, and that, in the most severe poisoning, no chloroform can be detected either in the blood or the expired air. It would thus prove that the physiological evidence is in strict accord with the chemical facts, for the symptoms induced by chloral are only analogous to those caused by chloroform, not identical; and, as any one may observe, if proportionate doses of chloral and chloroform be given to animals, the sleep induced by the former is not only much more prolonged, but also more intense. Further, the anæsthesia of chloroform is much more intense than that of chloral. Another point to be observed is, that after chloroform poisoning, biliary colouring matters appear in the urine, whilst after chloral poisoning none can be discovered; and that if choral be added to blood outside of the body, no destruction of the red discs occurs.

The physiological action of chloral may be briefly summarized thus:—It acts as a most powerful and certain hypnotic upon the cerebrum, in large doses; it acts as an intense depressent upon the centres at the base of the brain, and upon the spinal cord, causing slowing and weakness of the heart's action, probably vaso-motor paralysis, slowness of the respiration, and muscular weakness, with a certain amount of anæsthesia; in fatal doses causing death generally by arresting—through

paralysis of the nerve centres,—first respiration, and finally the heart in diastole.

Therapeutics.—In veterinary practice, chloral hydrate can be administered with advantage as a hypnotic, and, on the whole, I might say chloral is unequalled as a sedative. In the sleepnessness occuring at times during convalescence from acute disease, it will be found very efficacious. In the early stages of fevers it will be found of some use. It can also be administered in moderate doses, with marked effect, to relax spasm. In Tetanus it is claimed that chloral is *the* remedy; and I believe there can be no doubt of this, as it constitutes the whole or major part of the treatment of some eminent practitioners. In the chorea of dogs, it has been used with very great advantage; especially when the disease has become acute, in which speedy death is threatened from the incessant and violent movements. Given in combination with bromide of potassium, it acts like a charm in the last-mentioned disease; as it will quiet the patient, check the involuntary movements, and produce a most refreshing sleep.

CANINE DISTEMPER.*

BY J. W. HILL, M.R.C.V.S., WOLVERHAMPTON.

In responding to the call I was honoured with by our President, to bring a paper before this meeting of the Midland Counties Veterinary Medical Association, I did so with a considerable amount of diffidence; inasmuch as I felt at a loss what subject to introduce to your notice, and when I had selected it, whether it would be interesting enough to arrest your attention. After some little consideration, I decided that matter relating to animals rarely discussed at these gatherings would be possibly an agreeable change from the ordinary essays brought forward, and I trusted of sufficient importance to meet your approval. With these thoughts I chose for my subject "Distemper in the Dog"—a disease of common occurrence, well known to veterinarians, and a plague to the majority of dog-owners.

* Read at the meeting of the Midland Counties Veterinary Medical Association, on August 24.

Probably no disease to which our canine friends are subject has received less attention *scientifically*, or caused greater diversity of opinion when it has received that attention, than the one termed "Distemper." Every gamekeeper, dog-breaker, or kennel-man has his particular recipe; most druggists possess some wonderful prescription; while sporting and other papers abound in advertisements of specifics and nostrums.

In the course of this paper, it is not my intention to lay down any fixed rule of treatment adapted to every case, but only for those in which the disease assumes the forms herein described, and from which I have derived the greatest benefit.

Nature, in many instances, works her own cure; while numerous methods of treatment produce mischief, and result in death.

Distemper may be described as a Catarrhal Fever, generally affecting the mucous membranes of the head, air-passages, and alimentary tract, in which frequently the nervous system becomes involved,—hence Distemper fits and local or general paralysis. It is a highly contagious disease, though oftentimes it is undoubtedly self-generated. Age is no preventive: at any period of life dogs are liable to become infected. But Mr. Fleming correctly observes, "It is more particularly a disease of youth, and is much more frequent and fatal among highly-bred, pampered animals, than those which live in a less artificial manner, and whose constitution is less modified by breeding and rearing."* Neither does one attack render a dog secure from a second; but in the latter it is contracted, I believe, invariably by contagion alone.

Distemper is not, as many persons suppose, a necessary disease, as numbers of dogs pass through life without ever becoming the subject of it. The fact of the malady being unknown in this country prior to the seventeenth century (*query*) strongly supports this view, as dogs then were probably as numerous as now, though not perhaps so mixed in breed.

In all cases it is ushered in with catarrhal symptoms, and these, as the malady proceeds, may become complicated with Pneumonia, Jaundice, Enteric Disease, Epilepsy, Chorea, or

* "Veterinary Sanitary Science and Police," vol. ii. p. 290.

Paralysis: though the two latter are as a rule sequels, I have occasionally seen them exist in conjunction with Distemper.

Causes.—These may be enumerated under the following heads:—Contagion, badly drained and ill-ventilated kennels (which to young dogs are especially fruitful causes of Distemper), exposure to damp and cold, insufficient feeding and poor food, over-feeding (particularly with flesh), and too little exercise.

Worms have been mentioned by some authors as another cause, and certainly they are frequently present in this disease; yet it must be borne in mind that they are equally so in dogs that are over or have never had Distemper. That their presence bodes no good to the animal while under the influence of the infection (or indeed at any time), can be readily understood, but especially, I should say, during the existence of Distemper: because the mucous membranes are then in an irritable condition, and these pests are not likely to reduce, but to increase that irritation, and produce—what is to be dreaded at all times, but doubly so in Distemper—a fit, the condition of the patient then warranting it. (I qualify it thus, because there are circumstances under which it would be unwise to administer the drugs usually given for this purpose.) The sooner the worms are expelled the better. As a vermifuge, the areca nut is least harmful; turpentine, at other times most valuable, must be used with great caution here.

Teething has been affirmed as another cause of this disease, but here again the assumption has probably taken place from dogs at that period of their lives being most liable to Distemper. An irritability of system and degree of inflammatory fever is undoubtedly established at that crisis; and such a condition may render the subject more liable to contract the disease, if brought in contact with it; but certainly not otherwise, any more than the same process can produce in human beings Measles, Chicken-pox, or Scarlet Fever.

The period of incubation is usually from one to three weeks, and the duration of the malady may be a week, or two or three months.

Symptoms.—The premonitory ones are: A heavy sleepy look about the face, nose hot and dry, a disinclination for food,

shivering, arched back, and more or less lassitude. In from two to three days a watery discharge takes place from the eyes and nose, the animal frequently sneezes, and this is followed by coughing, retching, and vomiting. The discharge from the eyes and nose soon becomes purulent, the eyelids are inflamed and swollen, the breathing is accelerated, the inclination for warmth more evident, and the prostration greater.

Prompt and judicious treatment, in a case of this kind, will generally be attended with success. Immediately the first of the foregoing symptoms are observed, the patient should be placed in a dry, but not too warm atmosphere, and the habitation—if in the kennel—well drained and disinfected.

With regard to medicinal agents, a mild emetic is at the onset advisable, as—

Antim. Tart. . .	1—3 grains.
or	
Antim. Tart. } Calomel }	*a a.* 1 grain.

A good household emetic is a teaspooful each of mustard and salt in a little warm water: its action is speedy and safe, and it fulfils all the purposes required.

The favourite draught of syrup of buckthorn and castor oil, is not always applicable; but in the majority of cases of this kind it is beneficial, and should follow the emetic within a short time. When the catarrhal symptoms advance, and coughing takes place, I recommend the insertion of a small seton in front of the chest; this is to be daily dressed with mild digestive ointment, and not removed so long as bronchial irritation is present. Stimulants, combined with tonics, are also required at this period. Either of the following forms may be used:—

Spts. Æther Nit.	4 drachms.
Tinct. Gentian Co. . . .	4 „
Aqua Menth.	1½ ounce.

A teaspoonful three times a day for a terrier; double the quantity for a large dog.

or

Port Wine	a teaspoonful.
Quinine Sulph. . . .	1 grain.

With the same directions.

The food should be light and nutritious—as milk, mutton broth, or beef tea deprived of its fat. If the patient refuses to take anything, meat nearly raw, chopped small, and made into balls and administered, will afford the best means of support. When the catarrhal symptoms have subsided and recovery commences, cod liver oil and iron materially assists in hastening the process. The dose is a teaspoonful of the former and five mimims of the latter for a small dog, double the quantity for a large one, twice a day. The natural diet to be gradually introduced—as strength returns. I must not omit to observe that it is highly important that the discharge from the eyes and nose should be frequently and carefully removed, especially from the former; otherwise ulceration of the eyelids, conjunctiva, and even the eye itself, is apt to take place, and not unfrequently results in total loss of vision. A daily application of some mild astringent —as five grains of alum to one ounce of water—will assist in preventing ulceration—by counteracting the relaxed condition of the mucous membrane and secretory glands.

If, however, ulcers have already formed, warm fomentations with milk and water, the avoidance of glare (as the sympathetic inflammation is often very great and the parts peculiarly sensitive to light), and the use of either of the following lotions may with benefit be adopted:

1. Tinct. Myrrh Sim. . . . . 20 drops.
   Sol. Alumen . . . . . 1 ounce.
   Aqua Distil. . . . . 10 ounces.

or

2. Zinc Sulph. or Plumbi Acetat. . . . 1 scruple.
   Aqua Distil. . . . . 10 ounces.

or

3. Nitrate of Silver . . . . . 4 grains.
   Aqua . . . . . 1 ounce.

The second and third forms are more applicable when fungoid growths succeed the ulcerative process.

When the eyes remain weak after recovery from Distemper, with opacity of vision, a seton inserted at the back of the ears, and daily stimulated, is of great benefit. The time for its removal is to be regulated according to the condition of the

eyes; here the third form of lotion is useful. Frequently small circular depressions present themselves on the cornea, which, if neglected, assume an ulcerative condition, and extend to the anterior chamber of the eye. In such cases, I have found a little calomel daily blown on the surface attended with the best success.

I will now proceed to speak of Distemper in some of its more complicated forms.

It not unfrequently happens—particularly in house pets, whose diminutive bodies are foolishly and unnaturally clothed in miniature horse apparel—from their susceptibility to cold, or from not being observed in time, that the catarrhal symptoms increase suddenly in intensity, Bronchitis sets in, and speedily upon that Pneumonia. The hot, rapid, gasping breath, and unmistakable mucous rattle of the former, with, on auscultation, the rasping crepitating *râle* in the latter, the sunken eye, jerking, increased heart-beats, haggard face, dilated nostrils, and mouth drawn back at the angles, soon inform the practical man where the mischief is located.

A seton, if not already inserted, should be done so immediately in front of the chest, and action excited as quickly as possible. Turpentine is, I think, the best agent for this purpose.

Hot linseed-meal poultices, applied to the sides, are exceedingly beneficial. They should be covered by a handkerchief brought under the girth, and tied over the back, *but not too tightly, so as to compress the walls of the chest.* These should be repeatedly renewed, and succeeded, if the animal is not relieved in six hours, by mustard cataplasma.

With regard to internal remedies, diffusible stimulants are best adapted to such cases. I recommend the administration, to a small dog, of a teaspoonful of brandy and water (equal parts), with two drops of chlorodyne, every hour; double the quantity for a full-sized terrier, treble for a large dog.

Beef tea, mutton broth, or milk in which plain biscuit or bread has been soaked and broken down, should be given with a spoon, unless voluntarily taken, two or three times during the day.

If there appears danger of suffocation, emetics may be administered until vomiting is induced. The ipecacuanha wine in some cases answers well—dose from fifteen to thirty drops in a little warm water.

When the acute symptoms have subsided—which the breathing becoming less laboured and panting, the heart's action steadier, pulse less frequent and softer, and an occasionally deep-drawn sigh will denote—the brandy may be given at longer intervals, the chlorodyne suspended, and the tincture of iron substituted, in five, ten, or fifteen drops, in proportion to the size of the dog. The body must be kept warm, but fresh air is throughout absolutely necessary; therefore ample ventilation, without draught, should be allowed. This is a point I am most particular upon. Often and often have I found my little patient, through the mistaken kindness of its fair owner, smothered in shawls before a hot fire, and almost totally deprived of one of the great essentials to recovery—the inhalation of fresh and cool air. As veterinarians, we are by this time all thoroughly aware of the importance of this great principle in the treatment of catarrhal diseases in the lower animals; and in proportion to that knowledge, so has our success been greater; and diseases of this type are now few and far between, whereas they were once rife and fatal.

As the symptoms continue to abate, the nourishment of the diet can be increased, and cod liver oil may be given as previously described.

When Distemper becomes associated with Jaundice, it is commonly called the "Yellows," and treated by kennel-men and quacks as a distinct disease; though I need hardly tell you that it is but the result of general derangement of the system, consequent on improperly treated or neglected Distemper.

The symptoms are a yellow tinge of the eyes, visible mucous membranes, and thin parts of the integument—as inside the thighs, fore-arms and ears, and that covering the abdomen; pain on pressure over the region of the liver, and sometimes enlargement, with hardness; the fæces pale and hard, or soft and greenish, and mingled with mucus; the urine high-coloured, hot, and occasionally turbid.

The patient may or may not exhibit catarrhal symptoms with Jaundice. In Distemper it most frequently follows the former.

A mild dose of aloes and calomel is generally at first advisable, but in the administration of this we must be guided by the other symptoms. If the catarrh is still present, or the bowels irritable, aloes must certainly be avoided. Five-grain doses of Hydrarg. *cum* creta may be given daily to a medium-sized dog; and if this is found to be unattended with benefit, sulphurous acid—from three to ten drops in a little cold water—may be tried, and is frequently given with success. The addition of quinine is often useful.

A mustard poultice applied over the region of the liver, in severe cases, affords considerable relief, and at the onset is of especial service.

The diet should be plain and light; milk, with one-third its quantity of lime-water, is most suitable until an improvement in the symptoms is observed.

When the disease extends to the bowels—which, in neglected cases of Distemper, or even in those most assiduously attended, it frequently does—a violent form of diarrhœa or dysentery sets in. The fæces are dark, streaked with blood, and offensive; the patient rapidly wastes, has a sickening odour, and speedily dies, often even under the most energetic and judicious treatment. A mild dose of oil (linseed or salad) is generally at first advisable, and in three hours this is best followed up with antacids and astringents:—

1.	Sodæ Bicarb.	10 grains.
	Catechu Pulv.	10 „
	Opii Pulv.	2 „
2.	Cupri Sulph.	5 to 10 „
	Opii Pulv.	2 „
3.	Tannic Acid	5 „
	Opii Pulv.	2 „
	Zingib.	10 „

In severe cases, the last prescription (No. 3) is the most effectual. Should the purging continue, and symptoms of pain be manifested, hot linseed-meal poultices applied to the abdomen

afford relief, and materially assist in checking Enteritis. Starch enemas are likewise serviceable.

The diet should consist of strong beef tea, in which isinglass or gum arabic has been dissolved in proportions to make it sufficiently mucilaginous to shield the living membrane of the stomach and intestines.

With regard to the so-called "Distemper fits," it is almost needless to remark that they are always a dangerous sign, being seldom limited to one attack. Sometimes they appear as the forerunner of Distemper, but more frequently as an accompaniment, and when the patient is low and wasted.

Immediately symptoms of cerebral disturbance are observed, a seton should be inserted in the occipital region, and action excited as quickly as possible. Let the animal freely breathe fresh air; administer brandy and water; and if diarrhœa is still present, suspend the opium, but continue the antacids and astringents, and give the brandy with beaten egg or other mucilage. During the seizure, neat brandy may be rubbed on the gums, and ammonia applied to the nostrils. The food should be nutritious, and all other means adopted which are calculated to impart tone to the system.

In protracted cases of Distemper, when the system as it were has been taxed to the utmost, and the patient reduced almost to the lowest ebb of existence, a cuticular eruption makes its appearance. This generally, in the first instance, assumes a pustular form, and these pustules in the course of a few days break, and leave by their exudation a crust or scab. Either the whole or a portion of the body only may be involved. I have seen a dog literally naked, with the exception of the head, ears, and feet.

This condition is not unfrequently mistaken by the would-be "knowing ones" for Mange, and treated as such.*

* I well remember a case in point which came under my own observation—the subject being a Skye terrier. The case, when first brought to me, was one of Distemper associated with Pneumonia (the animal being thought consumptive); later on dysentery set in. Several times the animal was on the verge of death, and it was only by my persuasion that he was allowed to continue under treatment. Ultimately he took a turn for the better, and almost simultaneously the eruption described broke out; the stench emitted after it made its appearance was simply abominable. In a

There is, however, no analogy between the two. The Distemper eruption and loss of coat is simply owing to suspension of the secretions necessary to the growth and support of the hair; or if not actual suspension of these secretions, then from such an exceedingly low state of vitality of the surface of the body that life and health in the appendages of certain parts cannot be maintained.

Occasionally this eruptive stage is the forerunner of a return to health, but much more frequently it is a precursor of a fatal issue.

At this period of the disease, tonics are especially indicated, and everything in the shape of diet, exercise, cleanliness, etc., calculated to promote vigour.

When Chorea or Paralysis exist with Distemper, remedies specially adapted to either must be used in addition to, or in conjunction with, the Distemper treatment. Strychnine or nux vomica is undoubtedly the most effectual restorative agent in such cases.

It would be superfluous on my part, in the presence of the scientific body of gentlemen here assembled, were I to hint at the care required in the administration of this drug. I will merely observe, for the benefit of non-professional persons, that cases have fallen under my notice in which death had resulted from irregularity in the time of giving such medicine, and more particularly where the dose had been for some time gradually

few days every vestige of hair, with the exception of that on the head, ears, and lower part of the legs, came off. He continued in this state for several weeks, the skin being perfectly clean and whole, but very glazed. In every other respect he improved daily, and gained flesh. The owner and another gentleman maintained that the dog had contracted Mange; nor could I convince them to the contrary. In vain I argued the difference of symptoms, and that as the system gained tone so would the patient regain his coat. But no: the dog was removed, and placed out to nurse in the hands of a dog-breaker—he also being of opinion it was Mange; and this worthy individual, according to his own account, brought away that which the patient never in my possession possessed—*a hatful of worms*. Some time afterwards I met the gentleman to whom the animal belonged, and was asked if I recognized the dog he had with him. Certainly, as my old patient, which he proved to be, I did not; for he was clothed in an entirely new coat, and of an entirely different colour—dark, nearly black, stubbly hair having taken the place of the original silver-grey—the result, in all probability, of the dressing applied to the sensitive and weak skin. In this instance the breaker claimed the cure which nature had wrought.

increased until it had reached more than treble the primary quantity. Forgotten for some hours, or it may be a day, and then given perhaps fasting, a fatal issue is pretty nearly certain to follow. When there is any difficulty in administering the medicine in the form of pills, the liquor strychnine may be conveniently substituted.

Local remedies in Chorea and Paralysis are often very beneficial. I have found setons exceedingly valuable. If the convulsive movements of the former, or the numbness of the latter, are confined to the hind parts, the seton requires inserting across the loins; if general, at the back of the head and across the loins. Counter-irritation along the spine is also serviceable, and galvanism is occasionally useful.

Though, in principle, the hot bath, from its relaxing properties, may appear wrong, it is nevertheless, in Chorea, sometimes attended with good results. It certainly affords relief when the convulsive twitchings are excessive, and so far I have observed no after evil from its use. I should not advise its adoption when Distemper also existed. Quietude, except when the patient is necessarily disturbed, is very essential; and attention to the bed being dry, and the excretions regular, are also matters of importance in Chorea and paralytic affections.

When abatement of the twitchings, with returning strength, is observed, a favourable issue may be expected; but it is advisable not to discontinue the medicine so long as any nervous complication remains; afterwards it should be gradually, not suddenly, suspended.

As soon as the patient is able to walk, a short exercise each day may be given with benefit. The fresh air acts as a tonic, new scenery and objects divert the mind, while exercise encourages the natural habits and functions of the animal.

Tincture of iron and cod liver oil is advisable after the disuse of the strychnine, until recovery is complete. The diet throughout should be nourishing and digestible, and forcibly administered if the patient refuse to take it. Constipation, which is frequently present in Chorea and Paralysis, is best relieved by enemas.

With regard to preventive measures for Distemper, I shall not at this late hour more than observe that due attention to

hygienics is the only and best preventive. Vaccination has been extolled and condemned,—condemned justly, inasmuch as there is not a shadow of analogy between Canine Distemper and Small-pox.

Lately, efforts have been made, though unsuccessfully, to establish an identity between Distemper and human Typhoid Fever: for, as Professor Axe pertinently remarks, "Did Distemper in the dog possess the property of communicating Typhoid Fever to man, it is difficult to understand how myself and others have so long escaped infection. During the past twelve years I have examined large numbers of distempered dogs immediately after death, and thus exposed myself to the emanations from every secretion and excretion of the body; but in no case have I suffered the least constitutional disturbance." This illustration, it may be argued, is worthless in itself, and is capable of explanation on the ground of insusceptibility; but the same remarks apply to scores of others who have been exposed from time to time in a similar manner. In regard to the propagation of the Typhoid contagium, Dr. Budd says: "If the poison from which Typhoid Fever springs were capable of being bred elsewhere than in the human body, it would surely be in the bodies of animals which are made of flesh and blood like ourselves, and from whose substance we draw sustenance for our own. And yet it appears to be almost certain that this is not the case. In the most virulent outbreaks of Typhoid Fever, there is no evidence that the domestic animals which gather round the fever-stricken dwellings ever take the disease. At Cheffcombe, while nearly all the human inmates of the infected homestead were laid low by the poison, the dogs and cats which belonged to the house, and the poultry, pigs, horses, and cattle which thronged the yard, continued to enjoy perfect health. Yet the pond from which the latter drank was being continually polluted by a drain which received the whole bulk of the intestinal discharges from the Fever patients!* The statement of 'H. H.' that the symptoms of Distemper in the dog and Typhoid Fever in man are 'alike,' is true only so far as refers to the febrile state. The specific phenomena of the latter most surely find no

* This is strong evidence: sufficiently so to be conclusive.—J. W. H.

counterpart in the symptomatology of the former. It is only in the continued type of the Fever that any identity can really be said to exist. If we examine the main features of the two affections, we find at once a broad and unmistakable difference in their clinical and pathological equivalents," etc., etc.

INTUSSUSCEPTION IN AN ELEPHANT.

BY B. A. W. POWELL, M.R.C.V.S., 3RD REGIMENT MADRAS LIGHT CAVALRY, SAUGOR, CENTRAL PROVINCES, INDIA.

On the march from Delhi to Saugor, Central Provinces, my present station, at Camp Tolbait, a male commissariat elephant was reported to be unwell, and my attendance was requested. On arrival, I found the animal in slight pain, indicated by his general uneasiness; pulse 57 and full; extremities cold; urine scanty, but very high-coloured; fæces soft and constantly voided (Mr. M——, the commissariat sergeant, thought this latter symptom was due to the creature being in a state the natives term *Nāgā*, which is produced by their eating large quantities of a particular kind of earth, and which acts as an anthelmintic); off feed. The following morning I found all the symptoms much increased in intensity; pulse (taken at a branch of the carotid artery, which passes over the internal surface of the ear, and may be detected by the naked eye) 70; pain greater, evinced by the animal resting one hind-foot on the opposite leg, and *vice versâ*, by his passing the trunk into his mouth and gnawing it, and by his pertinacity in refusing to obey his mahout.

Diagnosis.—Enteritis; at which opinion the mahouts and Sergeant M—— appeared to be very much amused.

Treatment.—Foment abdomen continuously, and apply Ol. Terebinthinæ ℥ij to same every hour. As the patient entirely refused to eat any food, or drink water, medicinal agents internally were, of course, out of the question. Injection *per rectum* would have been only waste of medicine, as the stools were so frequent.

The following day, at 3 a.m., this young (36 years) and previously very healthy animal died.

The *autopsy* revealed an intussception for a distance of 22½ inches, of that portion of the small intestines which commences at the pyloric orifice of the stomach: the whole was one mass of dark congestion, and the gut (duodenum), instead of being a hollow cylinder, was completely filled with dense fibrin, which appeared to be undergoing organization. The whole of the other organs of the body were healthy.

In conclusion, I may remark that the large intestines were positively loaded with two kinds of parasites: one the *Musuri*, and the other the *Soortie;* at least, such are the names they are called by the natives of Bengal. The *Soortie* are long (1 to 1¾ inch) transparent, thread-like worms, and abounded in the ingesta. The *Musuri* are small, rhomboidal-shaped, semi-transparent bodies, about ¼ inch in diameter, and adhered in clusters of from twenty-five to fifty to the lining or mucous membrane of the intestine.

Intussusception is rather a rare disease amongst the *Proboscideæ* class in this country; and it is for this reason I have sent a brief outline of the case, which may interest some members of our profession.

DOUBLE SCROTAL HERNIÆ.

BY R. MOORE, M.R.C.V.S., SHEFFIELD.

THE subject of this communication was a valuable half-bred colt, suffering from Double Scrotal Herniæ—a very uncommon complication.

The case had alarmed both professional and unprofessional men, who thought operation impracticable. Mr. Cartledge was requested to see the colt, which was some distance from here; and he, with full knowledge of the difficulties of the case, undertook to operate.

The colt was brought to Sheffield for the purpose. As to the mode of operation, it was thought the whole of the scrotum and its contents had better be enclosed in a single clam, and

allowed to slough. The impression was, that if two clams were used, there would be a difficulty in keeping them *in situ*, also in cutting off the required extent of integument.

The colt was cast in the usual way, and the bowels returned into the abdomen. The testicles were placed in position, and a strong steel clam—fastening by a joint at one end and a screw at the other—was placed round the whole, including both cords, tunic, and scrotum. Care was taken that the clam was placed as near the rings, and embracing as much integument, as possible. The screw was then made tight, and the colt allowed to rise.

The clam was frequently tightened by means of the screw, and was taken off at the end of a fortnight. That portion of the slough which had not separated was removed; the parts were afterwards kept clean, and digestive ointment applied occasionally. During the whole of the sloughing process the colt was evidently not much disturbed, the swelling and stiffness being trifling. He was discharged from hospital a month after the operation, in all respects healthy and well.

DISPLACEMENT OF THE GASTROCNEMII TENDONS IN A YOUNG BULL.

BY THE SAME.

ANOTHER uncommon case I came across a little time ago, in a young bull—ten months old,—which I was told was suffering from "Rheumatics" in the hind-legs, and unable to stand. Upon examination I found that the Gastrocnemii tendons had slipped off both hocks, carrying with them the summits of both *ossa calci*, which had not become thoroughly united. The cause was not known, as the bull had not been out of his box.

I concluded that he must have had a slip or some such accident. He was very large for his age, and no doubt the formation of bone had been too rapid to be perfect, and the muscular power greater than the osseous.

THE PREVENTIVE AND CURATIVE MEASURES FOR ANTHRAX FEVER.

BY E. DECROIX, PRINCIPAL VETERINARY SURGEON, FRENCH ARMY.

THE celebrated chemist, Dumas, has discovered that boracic acid and the borates of soda and potass arrest chemical fermentations. Starting with this idea, Giovanni Polli, an Italian professor, in a work which has been recently translated into French by Doctor Pietra Santa, has made known a series of experiments from which it resulted that the borates are anti-zymotic, anti-putrescent, anti-fermentescible, etc., agents. It is therefore logical and rational to employ them against alterations in the blood.

Quite lately I have been in a position to try the borate of soda in Anthrax Fever (Charbon), and I believe it will be useful to direct attention to the results obtained.

From the 20th to the 28th June, six horses among fifty were attacked with Essential or Symptomatic Anthrax: of these three had died, and the remaining three "were in an almost desperate state."

The ordinary treatment, employed energetically and with intelligence and promptitude, did not prove satisfactory, as is usual with such a malady. In presence of this insuccess, I prescribed, as an internal *curative* agent, the borate of soda, in dose of one hundred grammes daily, dissolved in water and administered as a drench. The borate of soda having but little taste, was taken without any trouble by the patients; all the stimulants, tonics, anti-putrescents, etc., generally employed, were suppressed. The external revulsives and cauterisation of the anthracoid tumours were continued. As a *preventive* measure I prescribed twenty grammes of the borate (thirty to forty grammes might be given) for each horse daily. I also suggested that the stables should be evacuated, but this advice was not followed.

The prescriptions were made on the 28th of June, at nine o'clock in the morning. On the 29th, at half-past ten, one of the three patients succumbed; while another horse, which had

been admitted into the infirmary for the same disease, commenced to have anthracoid engorgement of the hocks. At this period the medicament had not had time to act on these two animals. Another new case occurred on the 30th, while the preventive medication had not been very regularly followed out until the previous day. With regard to the mortality, this had completely ceased; and the two horses which were so ill that their case was supposed to be almost desperate, nevertheless recovered. The horse which was admitted on June 30th was not altogether out of danger on July 24th. The use of the preventive drenches was continued until July 16th.

What conclusion is to be derived from these facts? Did the enzoöty cease because it ought to cease spontaneously? Would the animals so seriously affected have been cured by the ordinary means? Or had the borate of soda been the principal cause of the success obtained? I shall not attempt to solve these questions by more or less learned disquisitions.

But I beg of my *confrères*, civil and military, who may have to deal with anthracoid affections, to give the medication I have indicated a trial, and inform me of the results, positive or negative, of their observations—results which I shall hasten to publish.*

Secondary Question.—Much having been said, for several years, as to whether bacteria and bacteridæ are or are not inherent in anthracoid affections, I first examined, microscopically, blood from the jugular and from the tumours of the most diseased animals, but without finding any traces of bacteridæ. I afterwards examined, at three o'clock in the afternoon, blood taken from the heart, liver, and tumefaction on the throat of the horse which died on the 29th, but with no better success.

I then began to suspect my method of seeking for these very minute organisms, and therefore had recourse to the micrographers of the College de France, where I found myself at half-past four, and of the Sorbonne, where I was at five o'clock. Ranvier and P. Bert's assistants, to whom I owe sincere thanks, examined the blood I brought to them in a phial, but were also unable to discover bacteridæ. Bert's assistant

* M. Decroix's address is 3, Rue de Champagny, Paris.

inoculated a guineapig with this blood; the creature died twenty hours afterwards—as happens with Anthrax blood. The blood of the guineapig did not contain any bacteria.

THE ANATOMY AND PHYSIOLOGY OF THE KERATOGENOUS MEMBRANE OF THE HORSE'S FOOT.

BY DR. MOELLER.

(Continued from page 196.*)*

II. SUBCUTIS.

THE keratogenous membrane is only provided with a subcutis in certain portions of its extent; it offers many variations in its anatomical structure from the subcutis proper. In a modified form it is to be found in the following places:—

1. Under the perioplic ring and coronary cushion. Here it forms the immediate continuation of that portion of the true subcutis which belongs to the cutis covering the two first phalanges. It takes a coarser fibrous texture as soon as it reaches the perioplic ring. The fibres of connective tissue unite and form thick bundles, which constitute a coarse network and cross each other in every direction. Numerous elastic fibres are also present. The difference in this subcutis from that of the subcutis proper, becomes more and more marked as we approach the coronary cushion; so that in this locality it has almost entirely lost its loose structure, and has assumed a coarse net-like character. The cellular character has almost entirely disappeared; while the elastic tissue predominates. The numerous vessels—viz., veins (superficial venous network of the coronet)—are imbedded in the connective tissue situated beneath the coronary cushion.

2. Under the fleshy wall or podophyllous tissue, a subcutis is only to be found upon the superior part, and in those places where the cartilages form the foundation for the fleshy wall; further on is the anterior (or toe) portion, to an extent corresponding to the point of insertion of the tendon of the *extensor digitorum communis*. It is absent in the remaining and greater portion of the fleshy wall. In its histological structure, it offers no essential variations from that previously described. Here

also is to be found the non-cellular, coarse-meshed, and dense arrangement of the fibres. The subcutis of the fleshy wall is the immediate continuation of that of the coronary cushion. In its meshes are also to be seen veins in great numbers.

3. The "Strahlpolster," or pyramidal body, including the cushions, or "frog-cushion," forms a continuation of the *subcutis proprius*, upon the inferior (heel) portion of the foot; but it offers many essential modifications. The subcutis is here interpolated in the form of a flattened and pointed wedge, between the "fleshy frog" (velvety tissue), and the tendon of the *flexor digitorum profundas, s. perforans.* The basis of this wedge forms the so-called "Ballen," or plantar and volar cushions.

In the frog-cushion, elastic tissue predominates; the remainder is composed of connective tissue, which forms a dense coarse-meshed network. The cellular elements are much in the minority; this is especially true of the anterior portion—the point of the pyramid. The fibres of connective and elastic tissue in the frog-cushion are united in flat-like bundles, which, combined, form a sort of fascia, that runs in the horizontal direction of the velvety tissue—"fleshy frog." Some of those which are microscopically visible have received from the anatomists the name of "Huffesselbeinband," or "proper tunic of the plantar cushion" (Chauveau's "Anatomy," by Fleming, p. 802). Other fasciæ of inferior strength are also to be seen taking the same direction. This arrangement is, without doubt, of most essential importance when considering the inflammatory processes which take place on the frog-cushion, the velvety tissue covering it, the tendon of the "perforans," and the naviculo-pedal articulation.

The so-called "Glandulæ sudorifaræ" of the frog-cushion are, according to Franck, present here.* The superior portion of the frog-cushion unites with the flexor tendons, and presents a softer and looser structure; yet here is also to be observed a union into dense fibrous masses, resembling to some degree fasciæ. In the superior and posterior portion of the foot, the frog-cushion gradually passes into the subcutis of the pastern, and presents a rich deposit of adipose tissue. On both sides, where the tissue forms the foundation of the plantar and volar

* Franck, *Deutsche Zeitschrift für Thiermedicin*, vol. i.

cushions, it immediately merges into the connective tissue, which lies under the coronary cushion, and the podophyllous tissue, as well as that upon the lateral and median cartilages of the *os pedis*. These cartilages generally penetrate into the substance of the frog-cushion.

Apart from their points of union with the *os pedis*, the cartilages are entirely imbedded in a mass of connective tissue; this is, however, rich in elastic fibres. Upon the lateral aspects, the cartilages are covered by the subcutis which lies under the coronary cushion and perioplic ring; the connective tissue which encloses the cartilages on their median sides, is in continuation with that of the joints and of the flexor tendons. The connective tissue enclosing the superior and posterior (heel) portions of the cartilages, becomes merged into the *subcutis proprius;* and in the inferior part, with that of the frog-cushion. The connective tissue covering the median surfaces of the cartilages is less rich in elastic fibres, and lodges the deep vascular rete of the coronet. That part of this connective tissue in immediate relation with the cartilages, forms at the same time the perichondrium of these. It should be remarked that the cartilages do not, in general, present distinctly-marked contours. The cartilage which, on the surface, is often of a fibrous nature, is in the deeper parts more or less hyaline; the former portion merges, without distinct limits, into the surrounding connective tissue.

In the vicinity of the microscopically visible cartilage, the dense fibrous connective tissue is very meagrely supplied with chondroblasts,—which, however, increase in number as they approach the cartilages, until at last they are entirely in excess of the fibrous tissue, and are surrounded by an intercellular hyaline mass (hyaline cartilage). In other places, especially upon the lateral surface of the cartilages, the transition of the connective to the cartilaginous tissue is sharply marked; so that the stratum in immediate relation to the cartilage may be justly looked upon as perichondrium. Here, however, the fibres of connective tissue are also observed taking their course in the cartilage. The superficial layer of the cartilage is, therefore, of a fibrous nature.

The connective tissue situated under the keratogenous membrane forms one mass. That division situated under the perioplic ring and coronary cushion merges into that of the podophyllous tissue, and the latter merges into that of the frog-cushion. The last unites with the subcutis of the phalanges, and with the connective tissue surrounding the cartilages (parachondrium). The connective tissue found upon the lateral aspects of the cartilages, unites not only with that upon their inferior and superior portions, but also with that on their median sides, and accompanies the many vessels which penetrate these cartilages; thereby forming a dense "adventitia" to the same. The presence of this connective tissue upon all sides of the cartilages, and its union into an uninterrupted continuous mass, is a very important feature for us to recognise; because by this knowledge we are able to understand the manner in which inflammatory processes become extended in these parts.

Exact knowledge regarding the distribution of the lymphatics in the keratogenous membrane is, so far as my knowledge goes, wanting. Nevertheless, we may feel justified in assuming a rich development of these, from the fact of the presence of the large lymphatic trunks which accompany the lateral and median veins of each digit. Whether the observation of Geiger, cited by George Fleming (*Veterinarian,* 1870), that from an injured lymphatic of the foot 3 to 5 lbs. of lymph could be gathered daily, is trustworthy or not, remains questionable, especially if it has reference to the soft parts of the foot alone.

The injection experiments performed by me, in the manner prescribed by Hyrtl and Teichmann, made manifest the lymphatics in the points of the papillæ, as well as in the secondary vascular laminæ or laminellæ. The lymphatics in the papillæ seem, as a rule, to lie in the centre of the same; and at the base of the papillæ they form the rich *rete* in the sole and frog. In the "Stratum phyllodes" of the fleshy wall, it is possible to follow the lymphatics immediately to the rete Malphigii; and it appears as if the major part of them ascended the primary laminæ, in a direction transverse to the secondary laminæ. In the primary laminæ, they appear to take a course from the periphery towards the base. The lymphatics form circular

convolutions around the larger vessels, pursuing their course in the centre of each lamina, and finally unite in a single trunk, which, at the base of the laminæ, passes into a great lymphatic rete. In the "Stratum vasculosum" the lymphatics accompany the bloodvessels, which are enclosed in a dense mass of connective tissue, in order to compose larger trunks, which finally unite with those of the horny capsule.

From certain pathological phenomena, I find myself justified in concluding that the lymphatics common to each division of the frog-cushion possess a certain degree of individuality, and that the communication between both systems is of subordinate importance. The conditions to be considered in regard to the circulation in the vascular system of the foot, are equally applicable to that taking place in the large lymphatics of this organ.

Physiology of the Keratogenous Membrane.

It is not my intention to discuss the physiological processes in this organ *in toto*. I would only call attention to some special points which are still the subjects of controversy, and in some respects have not been as yet considered, although in fact deserving of most careful study. We will at first turn our attention to the conditions under which the circulation is maintained in the foot, and which offer to our view much that is interesting and peculiar; as they exert an immense influence, not only in supplying nourishment to the hoof matrix, and exciting its horn-forming activity, but also upon the inflammatory processes which may arise and run their course in these tissues.

Two factors are to be considered in studying the arterial circulation in this organ, as already remarked by Fleming (*Veterinarian*, 1872):—

1. The propulsive power of the heart.

2. The pressure of a column of blood, the height of which corresponds to the distance between the anterior aorta and the foot.

This column of blood being so considerable in height, its influence upon the forward movement of the stream must be

well considered. The blood pressure must, from this fact, be greater in the arteries of the foot than in any other region of the body. Not without good cause are the arteries in this region supplied with remarkably thick and elastic parietes, in order to render them equal to bearing this extreme pressure without danger of rupture.

The arterial system proper to the keratogenous membrane, is more richly supplied with anastomoses than any other portion of the organism. These anastomoses assure the supply, to all parts of this organ, of the necessary nourishment; so that extirpation of single vessels may take place without endangering the tissues (so-called "terminal-vessels" are not to be found in the foot); they also contribute to the regular distribution of the blood, which encounters many obstacles from the variations in pressure exerted upon it by the hoof.

(*To be continued.*)

A CASE OF TRAUMATIC PERITONITIS SUCCESSFULLY TREATED BY THE ADMINISTRATION OF SEDATIVES.

BY THOS. H. SIMCOCKS, M.R.C.V.S., DROGHEDA, IRELAND.

HAVING had, some time ago, to treat a case of Traumatic Peritonitis occurring after castration, and believing, as I do, that a successful result in such cases is not frequent, I send the particulars for publication in your valuable journal, should you deem them worthy of notice.

The animal in question was a valuable half-bred bay horse, seven years old, which had been used for breeding purposes for some seasons; but the owner not liking the trouble entailed by the possession of a stud horse, and not wishing to sell him, determined to have the operation of castration performed. For this purpose the horse was sent to my infirmary on the 20th September, 1876; and being then in rather high condition, I administered a dose of physic, and subsequently had him fed on a nourishing but easily digested diet, and gently exercised daily

until the 2nd of October. On this date, having ascertained that the testes and other organs of generation were healthy, and that hernia was not present, I had the animal cast, and removed both testicles by torsion. The horse, being of a particularly placid temperament, did not seem to suffer much during the operation, and on being released from the hobbles walked to his box as if nothing had taken place.

He was now put on a mash diet, and the case for some days seemed to promise a most successful issue. The patient fed well, was apparently free from pain, moved freely in his box, and the local swelling was even less than might have been expected; in fact, every symptom was most favourable until Wednesday the 11th of October. On that morning he ate his mash as usual, and was afterwards gently exercised for half an hour, he being evidently in the best of health and spirits. When given his mash at midday, however, he did not feed with his usual appetite—did not, indeed, eat more than half of it; but as on careful examination I found him free from any sign of disease, I was disposed to think that he was tiring of the sameness of the food, and desired that he should have a little boiled oats in the evening. At six p.m. the groom gave him this, but on returning to the horse in two hours he found that the food was untouched and the animal seemed in pain—standing with his head in a corner of the box, and pawing with the fore-feet frequently. I was at once informed of this, and went, accompanied by Mr. Ashbee, M.R.C.V.S., who happened to be with me at the time, to examine the horse. On my arrival in the stable, I found him pawing almost constantly with both fore-feet, belly tucked up and painful on pressure; legs and ears cold; respiration quickened; pulse 58, small and wiry; mouth cold, clammy and fœtid; and the countenance bearing a singularly wild and haggard expression. He had defecated an hour or so previous to my seeing him, and the fæces were then semi-pultaceous, with a few small scybalæ intermingled. As the case was clearly one of Acute Peritonitis, on consultation we determined on adopting the sedative plan of treatment recommended by Professor Ferguson in the *Veterinarian* for 1871; and the result has convinced me that the heroic measures of bleeding and purging, formerly adopted, were as unwarrantable as they were unquestionably fatal.

I now (8.30 p.m.) gave the following draught :—

Opii pulv., ʒij.
Belladonna Ext., ʒj.
Aqua fervid., gr. s.
M. fl. Hunt,

and ordered hot fomentations to be applied to the abdomen. At 10.30 p.m., Opii. pulv. ʒj *et.* Tinct. Aconite (Fleming's) ℥ xxv. were exhibited; the fomentations were continued, and in three hours afterwards another drachm of opium was given. The fomentations were continuously applied during the night; and on examination at 6 a.m. the following morning (the 12th), I found my patient much worse, the pulse being now 90, breathing very quick and shallow, and the animal evidently suffering most acute pain. Opii pulv. *et* Belladonna Ext. ā ā ʒij, were administered in water, and at 10.30 a.m. Morphia mur. grs. xv was given. At 2.30 p.m. Morphia mur. grs. x *et* Belladonna Ext. ʒij were exhibited, and I also had the animal gently evacuated by hand, but only two scybalæ were removed. At 10.30 p.m., the symptoms not abating, Opii pulv. *et* Belladonna Ext. ā ā ʒj were administered, and a suppository containing grs. x of Morphia mur. placed in the rectum. The fomentations were persevered in during the day, and were ordered to be still applied.

13th October, 6.30 a.m. Symptoms much the same, but pulse 108; the horse is constantly perambulating the box, and will not stand to be fomented; the pupils are much dilated, and the animal seems partially blind (probably the effect of the Belladonna). Gave Opii pulv. ʒj, Potassi iodid. ʒj, and used Morphia mur. grs. x in suppository.

1.30 p.m. No change; Opii pulv. ʒj, Potassi iodid. *et* Potassi bromide ā ā ʒj were given, and as he is now standing rather quiet, the hot fomentations are to be used,—a quantity of Ol. Terebin. to be put through the water.

6 p.m. No change. Repeat last medicine.

10.30 p.m. Pulse 104, almost imperceptible at jaw; pain seems not so intense, but the extremities have become deathly cold, and the mouth clammy. Removed some slimy fæces by manipulation, and ordered the turpentine stupe to be again used. Gave Potassi iodid. *et* Potassi bromide ā ā ʒj, *et* Ext. Hyo-

cyamus ʒij, Morphia mur. grs. x in suppository. He took a very little bran mash, for the first time since the attack.

14th October, 6 a.m. Has passed a small quantity of dry excreta during the night; this is the first motion since the 11th inst. Removed some rather soft and very offensive fæces by hand, and gave in a draught Potassi bromide *et* Potassi iodid. ā ā ʒij, and in suppository Belladonna·Ext. ʒj, Morphia mur. grs. x Pulse is now 96, and the patient eats a little mash.

12 noon. Has passed some hardened fæces since morning; pulse 104; refused mash, and is constantly straining, but passing only a small quantity of turbid urine very frequently. Gave Potassi iodid. *et* bromide ā ā ʒij.

6 p.m. Has defecated twice during the day—excrement rather soft and very offensive; pulse 96, temperature of legs and ears good, but the horse appears dull, and is constantly crouching and straining frequently, but passing very little urine. Medicine as before, with Aconite Tinct. (Fleming's) ℥ xx.

15th October, 6 a.m. On arriving in the box I found my patient lying; the legs and ears were cold, and the body bedewed with a cold sweat. He had evidently been struggling; the mouth was cold, and had a peculiar earthy smell; pulse 96, very weak, and imperceptible at the jaw. Seems in no pain, but very dull and dejected. I now feared that gangrene had set in, and gave no medicine, as I looked on the case as hopeless. But at noon the animal seemed much better; he lay quietly most of the morning, and has defecated once. As a good deal of flatus is passing, I gave Assafœtida ʒiv in aqua ℥xx, with Potassi iodid. *et* bromide ā ā ʒj. He took some bran mash, and the pulse is down to 68.

8 p.m. Pulse 62. Has remained down most of the day, but seems stronger and free from pain, except occasional spasms. Surface temperature good, and mouth fairly warm. Repeated last medicine, and gave Assafœtida ʒij in enema. Eats some bran mash.

16th October, 6 a.m. Pulse 54; seems much better; anxious expression of countenance gone; temperature of legs and ears good, and the visible mucous membranes healthy looking; passes a little urine frequently with great straining; flatus is still pre-

sent. Emptied the rectum manually, and gave an Assafœtida enema and a draught containing Assafœtida ʒij *et* Potassi iodid. *et* bromide ā ā ʒj. He drank a quart of new milk, and took some bran mash.

1 p.m. Has lain quietly nearly all the morning; took some milk and mash.

5 p.m. Explored rectum, and removed some fæces. Gave port wine ℥x, and a quart of milk; also a little boiled oats.

10 p.m. Has continued lying almost all the day, and sometimes indicates that he has stings of pain—probably from flatus, as some gaseous distension of the bowels seems to exist. Gave port wine ℥x, Potassi iodid. ʒj *et* Ammon. carb. ℥j, and left him some sloppy bran mash. When lying to-day, he occasionally extended himself at full length on his side, and frequently rose to micturate, passing a very small quantity of urine each time.

17th October, 7 a.m. Seems better and livelier; pulse 46, rather weak; has eaten his mash during the night, and had three motions; surface temperature good; and he does not attempt to micturate so often, nor does the act seem to cause so much pain, as during the previous two days. Gave port wine ʒx *et* Ammon carb. ʒij, and he drank half a gallon of milk and ate some mash.

1 p.m. Gave Ol. Lini ℥x, port wine ℥v, Ammon. carb. ʒij; had him out for five minutes, after which he took some milk and boiled oats.

10 p.m. Repeated port wine ʒx, and Ammon. carb. ʒij.

18th October, 7 a.m. Very dull; pulse 40, and weak; appetite not so good. Micturates frequently in small quantities. Gave port wine and Carb. ammon. as before.

12 noon. Seems very dull, and straining a good deal when micturating, and is disinclined to feed. Gave Iodine *et* Potassi iodid. ā ā ʒj, port wine *et* Ol. Lini ā ā ℥vj. He is not lying down so much to-day. Gave ten minutes' walking exercise.

10 p.m. Livelier, and inclined to feed. Gave some milk and boiled oats, and the port wine and Ammon carb. From this date a steady improvement was manifest—the only troublesome symptom being the diuresis, which continued for a week, and was combated by the use of light nourishing food, boiled oats, linseed and bran mash, as well as port wine, eggs, and milk. Potassi

iodid., Iodine, and Ferri iodid., were alternately exhibited, and on the 26th October I had the pleasure of discharging my patient thoroughly convalescent. I have recently seen him, and he is now in first-rate condition, and has carried his owner's nephew to hounds during the latter part of the season.

The success which attended the use of sedatives in this case, seems to me to be a conclusive proof of the propriety of the course of treatment adopted. In Peritonitis, as in other inflammations, one of the first indications is to secure rest for the affected organs; and the use of Opium is eminently calculated to effect this, by causing arrestation of the peristaltic action of the bowels. That it did so in this instance, is shown by the fact that no fæces were passed from the 11th to the 14th October; and to this I am disposed to attribute the recovery of the animal.

In the second stage, when it may be assumed that more or less effusion has taken place, the salts of Potassium are valuable, as, besides acting as direct arterial sedatives, and thus tending to constringe the capillaries and promote resolution, they are useful in causing absorption of the inflammatory products.

The alarming symptoms which set in on the morning of the 15th were doubtless due to an attack of flatulence, though at the time I feared they were the premonitory signs of dissolution. Consequently, I did not treat them as promptly as I ought to have done; but, fortunately, the *vis medicratix naturæ* was sufficient without extraneous aid. The excessive diuresis, which was a marked feature in the later stages of the case, was probably due to debility, and also to the irritation of the kidneys produced by the excretion of adventitious disease-products. I found the *Ferri iodid.* a most valuable agent in combating this troublesome complication.

Since writing the above, I have been attending another case of Peritonitis following castration, in a three-years-old animal, which I treated on the same principles and with the same success. In this case I exhibited diffusible stimulants at an early stage, in conjunction with the opium; as at one time the colt seemed to be sinking, the pulse being almost imperceptible at the jaw. He ultimately made a good recovery, and is now a valuable horse.

Editorial.

THE INCUBATION PERIOD OF RABIES CANINA.

There is no disease with which we are acquainted, whose latent or incubative period is so indefinite, and in some cases so protracted, as that of Rabies Canina, or Lyssa. In "Rabies and Hydrophobia," we have entered at some length into a consideration of this feature in the disease, and especially with regard to the human species. Of all the maladies which are transmissible from the lower animals to mankind, none has excited more interest—certainly none has been invested with such terrors, from the earliest up to the present time—as that produced by inoculation with the saliva of a rabid dog. The veterinarian has not, fortunately, to contend with any mental dread on the part of his patients, after they have been wounded by some suspected or really diseased member of the canine family; and he has but to keep them under observation for some months (if he does not think it more judicious, as a precautionary measure, to destroy them), in order to satisfy himself as to whether they have been really inoculated, or have enjoyed that mysterious immunity—the benefit of that perhaps only temporary non-receptivity—which certain individuals possess with respect to the most virulent maladies. With mankind, on the contrary, and especially with nervous adults, the surgeon has a more difficult task, even when every possible measure has been immediately adopted to destroy the contagium at its point of insertion. The mental disturbance produced is often very great, and the mind of the injured person often dwells pertinacously and fatuitously on the impending danger. In this way a miserable existence of months' duration may be in store for the unhappy individual; and if the virus be implanted and have found a congenial soil, the mental perturbation may hasten its development. Recently much has been said with regard to mental Hydrophobia—that is, Lyssa due to the influence of the imagination alone. Certainly the mind of man has great power over his physical organization, but we do not believe it possible that any one could simulate the real malady. The symptoms are so distressing, so characteristic, and so much beyond the control of the patient, while the duration of the disease is generally so well defined and its termination so invariably fatal, that no one who had ever witnessed a case would venture to pronounce it as arising from a disordered mind. It cannot be an imitative disorder, as few, if any, of its victims have ever seen a person suffering from it. The symptoms are the same in the adult and in the young child, whose mental faculties are not sufficiently developed to allow it even to remember that it was bitten. We have for years insisted upon the fact, that the term "Hydrophobia," commonly employed to designate this malady, is utterly erroneous and misleading when applied to animals, while it is not altogether correct in its application to mankind. A dread of water is not a pathognomonic symptom in man, as it is present in other diseases and not always in this, while it is never observed in rabid animals. We may therefore dismiss altogether from consideration the fanciful notion

with regard to "mental Hydrophobia," as we may also that of "mental Tetanus."

In experimental inoculations, when the animals inoculated have been kept sufficiently long under observation, the latent period has been correctly noted, as will be found in the work above mentioned. The incubative period, when the inoculation has been accidental, cannot always be ascertained; but there is reason to believe that it is of longer duration, and more variable. With regard to mankind we have more definite information, as the patient or other persons can remember when the wound was inflicted. Nevertheless, when an interval of more than a year has elapsed between the receipt of the injury and the development of the symptoms, grave doubts have been entertained by many authorities as to whether a subsequent inoculation may not have taken place, which the individual may have forgotten. It appears so strange that an animal poison could lie so long dormant in the system, that cases of Lyssa occurring one, two, three, or more years after a wound inflicted by a rabid animal, have generally been received with doubt or incredulity, and the outbreak ascribed to other causes. But it appears to be forgotten that the contagium of some other maladies, like the seeds of plants under certain conditions, can exist in the living tissues for a long time without germinating—if we may use the word—until circumstances develop its latent power.

Well authenticated instances are accumulating, in which this latency of the rabific virus appears to have continued for years; and though these instances are rare—the period not often extending beyond four or six months—yet we can scarcely hesitate to accept them as reliable when we find how clearly and circumstantially their history is recorded.

This extraordinarily prolonged latency in man cannot be lost sight of by the veterinary pathologist, and particularly when discussing the origin of the disease; as it may serve to explain some of those outbreaks in which the scourge appears to arise spontaneously, and without the intervention of a pre-existing contagium. If the virus can lie dormant for three or five years in man, why not also in a dog? And if so, need we wonder that, after the cessation of an outbreak of Rabies among the canine population of a district or country, another may occur in three or five years?

Two instances of this unusual incubative or latency period have been quite recently recorded, and they are well worthy of notice in this respect. We have no very accurate statements with regard to one of the cases, and are therefore obliged to rely upon the report which appeared in the newspapers. There it has been stated that a Mr. A. Brown, of Stamford Rivers, near Chipping Ongar, Essex, and who is mentioned as being a member of the veterinary profession (though we cannot find his name in the Register), had died of Hydrophobia, the result of the bite of a mad dog three years previously. It is added that the deceased had made Rabies a special study, and had entertained the hope that the symptoms would not manifest themselves after such a long time had elapsed.

The second instance is so well described and vouched for by reliable

medical authority, that we venture to give the history *in extenso*, as it appeared in a recent number of the *Lancet*. The reporter is J. D. Hume, M.D., who writes :—

"The following case fulfils, you will admit, the indications of genuine Hydrophobia, though occurring at a remote date from the receipt of injury. The details differ from the instances where the morbid influence of the patient's imagination simulates the real malady, and he recovers on the exposure of his delusion, when the animal is proved non-rabid. Messrs. Bulsford and Young (surgeons), with myself, watched the progress of this rare example.

"An agricultural labourer, aged fifty-one, of good muscular build and average intelligence, received a slight bite on his finger in October, 1872, from his dog, which the same night gnawed through a door and worried a litter of pigs [they, becoming mad, were killed, and privately conveyed to London !] The animal next attacked another dog, which, evidencing soon its inoculation, was shot. The owner of the first infected hung his dog, now believing it really mad, and had his finger cauterised. His health from that day was not deranged, except by headache, till Monday, June 25th, of the present year, when he complained of general malaise and pain in the arm belonging to the bitten finger. He gave up labour on Tuesday, and next day sent for his surgeon. About ten o'clock a.m. on Wednesday, the characteristic symptoms began to appear. I first saw him about one o'clock p.m. He sat quietly in bed, was not even restless, but very anxious, for he had acquired the dread of fluids in idea or contact. I witnessed the nervous seizing of the glass, horror at its approach, and convulsive effort to swallow. With the above history, and such proofs of rabid poisoning, could there be error in diagnosis? The pain soon extended from the arm to the neck, the throat especially, epigastrium and diaphragm. His respiration often became gasping, with præcordial oppression. From time to time nervous erethism was excited by mere currents of air. Every hour he shuddered at the sight or sound or thought of liquids. An attempt to take medicine brought on the access of constriction of the throat. Deglutition was convulsive or denied to the sputum, and viscid or frothy saliva was ejected by jerky discharges. The tetanoid spasms continued to intensify ; movements of the jaws were irregularly performed in hawking and spitting, and delirious laryngeal noises recurred ('biting and barking' so called). He threw himself on and off the bed with loud hoarse screams. There was not much perversion of mind : his talk was at times voluble, at others abrupt, even fierce. His frame became more irritable and sensitive, his mouth parched. He was aware he had lost self-control, and warned his friends he might unwittingly bite them. His mental agitation, convulsive paroxysms, and sense of suffocation grew more severe every moment. Nervous exhaustion came on, and his last remission was the fatal termination. He never reached coma, but a degree of insensibility now and then. With staring bloodshot eyes, and incoherent words, he died asphyxiated, at nine p.m., being eleven hours after the seizure."

"Can the origin of such a convulsive attack in the saliva of a rabid dog," remarks Dr. Hume, "be disputed on the ground of the long period which elapsed from the infliction of the wound? The nervous centres are quickly poisoned by serpent venom. True, a few molecules of vaccine lymph, implanted beneath the cuticle, develop constitutional changes in a fixed period. But can the remote consequences of venereal contamination be pathologically explained? At such uncertain

intervals is the zymosis complete? Yet how tardily must the fermentation have taken place in the Hydrophobia case related in the *Lancet* of June 30th, 1877, by Dr. Burnett, where the bare arm of a man was bitten on February 22nd, and he lost his life, after four or five days' unmistakable attack of Canine Madness, on May 28th; or in another case, cauterised recently at St. Thomas's Hospital, fatal three months after! There may not be much practical advantage from pathology determining where animal poison can nestle during five years. But on what grounds can its latency for such a period be controverted? Is there not an analogy between tuberculous exudation or cancerous infiltration arriving at the active state of malignancy, and the history of *materies morbi* in human Rabies finally and fatally affecting the brain and spinal column? Why should the period of quiescence be limited without suspicion to months, and a doubt be thrown upon its prolongation for a few years?"

A "SPORTING GENT" ON THE VETERINARY PROFESSION.

IF it is sometimes well to see ourselves as others see us—even if their vision be somewhat defective or distorted—then scarcely any apology should be necessary for the appearance in our pages of an article entitled "Neology in the Veterinary Art," which was published in the September number of *Baily's Monthly Magazine of Sports and Pastimes*, and has been re-published in the *Sportsman* and *Sporting Gazette—minus* the Greek, which would seem to be too much for the readers of this class of literature. We dare not venture to say that we know more of the writer than is indicated by the initials "J. H. S." appended to the effusion; but if one may judge by the slang, the scraps of doggerel rhyme, and the attempts at Latin and Greek quotation, we might surmise that he belongs to that somewhat numerous class of pseudo-literary sportsmen who hang on to the sporting press, and are known among the lower stratum of turfites in which they move as "sporting gents." The majority of these are men who have failed in the calling for which their friends or relations intended them, or from various circumstances which we need not specify, have taken to the turf and the betting-ring in order to make a livelihood which they are unable or unwilling to gain in a more creditable manner. From internal evidence, we might venture to guess that "J. H. S." has dabbled, or perhaps still dabbles, in medicine —though not that of animals, as it is certain that he knows as little of the maladies of the lower orders of creatures as these creatures know of "J. H. S." Like all ignorant empirics, he entertains a high opinion of himself, and of course has his specific, which is that of the stableman—tartar emetic; though the latter, certainly *never* the veterinary surgeon, often prefers "black antimony"—probably because it is cheaper. If we could discover the whereabouts of "J. H. S.," we would commend him to the notice of the Royal Society for the Prevention of Cruelty to Animals as one far more likely to torture dumb creatures than to afford them relief—more particularly as he probably would have no more scruple in trying his hand at horse or cow doctoring, than he has in writing upon a subject of which he is not qualified, either from knowledge or disposition, to give an honest opinion.

It will be seen that "J. H. S." knows no more of veterinary medicine than is to be found in those popular horse-doctoring books which have to be written down to the comprehension of amateurs like himself; and that he

thinks the only book worthy of notice which the veterinary profession has produced during the last half-century, is poor Mayhew's "Illustrated Horse Doctor"! The presumption of such an individual in daring to criticise and stigmatise the whole body of the profession, is only equalled by the coolness with which he invokes the authority of country squires and noblemen in our condemnation. We have every reason to believe that "J. H. S.," if his article is to be taken as an indication of his character and social position, scarcely enjoys the opportunity of knowing personally the opinions of gentlemen—as a more untruthful, scurrilous, and disgraceful piece of writing never soiled the pages of a periodical which has any claim to respectability. An editor must indeed be hard pushed for "copy" when he is compelled to fill up space with such malicious and vile rubbish.

"J. H. S." begins by abusing veterinary surgeons (or "vets" as he is accustomed to designate them) as illiterate, careless of reading or study, horse-dealers and horse-copers, and utterly unworthy of confidence. But for the publication of his pernicious nonsense in *Baily*, we could not condescend to notice such disreputable imputations as applied to the entire body of the profession.

We do not deny that a few members may rather merge themselves in the horse-dealer's vocation, and they may even be illiterate and disinclined to study. At one time, owing to the public neglect of veterinary science in this country, education was of entirely secondary importance, and many men were admitted to the schools, and received a diploma, who could never be a credit to the profession. Not only this, but it is to be feared that some of the teachers themselves were very imperfectly educated, and valued either general or scientific education but little. Some years ago, we remember in a mixed company a professor—the principal of a school, and who considered himself to be the head of the veterinary profession, but whose chief claim to consideration lay in being a good talker—sneering at reading and writing men, and decrying those accessory sciences which have done so much, and will do more, to render medicine, human and veterinary, more perfect. But he knew more of the turf, perhaps, than of these sciences; and though his influence and example—so far as these went—could not fail to be damaging to some of those who studied under him, yet he never was accepted as a representative man by the entire body of the profession, and there is good reason to believe that his unhappy influence has to a large extent, if not entirely, disappeared. A long time has now elapsed; and the veterinary surgeon of the present day is, as a rule, very different to what he was, even not very many years ago; and we can confidently appeal, with some degree of pride and satisfaction, to the additions to our professional literature during the last ten years, in proof that we are not illiterate. There are in most professions men who read and write but little; though in ours—thanks to the Royal College of Veterinary Surgeons—they are decreasing in number every year. Men who act discreditably, and degrade themselves and their calling, are also to be found in other professions, and it is indeed fortunate for us that the most serious accusation "J. H. S." can prefer against us in this respect, is that we are "horse-dealers" and "horse-copers." If we admit that a few veterinary surgeons interfere with the horse-dealer's trade, and appropriate a share of it, we indignantly repudiate the slur being cast upon the entire profession. Some medical men have degraded themselves and injured the reputation of their calling by unworthy deeds, and some of these deeds in connection with the turf. Sporting and gambling doctors, who have committed crimes and offences through their *penchant* for horse-racing, are neither few nor far between. We may instance what occurred at Rugeley some years ago, and more recently the case of a sporting member of the medical profession who was severely punished for perpetrating a low libel on a

distinguished nobleman of unblemished character. Yet would any one dare to stigmatise the medical profession as composed of murderers, vulgar libellers, etc., merely because it had the misfortune to include in its ranks men who could be guilty of such offences, and who furnished matter for sermons on the immorality of the turf? Would any one venture to accuse the patrons of the turf of being everything reprehensible and bad, merely because a lot of disreputable characters have brought disgrace upon what was intended to be, and undoubtedly is, a most laudable and patriotic object?

As to the poleaxe and the bullet, it is needless to remark that a writer who knows so little of other matters connected with veterinary science, is not likely to understand those measures which are based on economical, sanitary, and humane principles, with regard to the extinction of contagious maladies. This ignorance is not rare, and it has cost the country heavily indeed.

"J. H. S." bases his defamatory strictures on a supposed outbreak of Typhoid Fever among horses at Baron Rothschild's, and is particularly severe upon two respected members of our profession for so designating the malady, which he asserts is impossible in the equine species. With regard to the impossibility of Typhoid Fever occurring in the horse, of course such a novice as the writer evidently is, is not qualified to give an opinion—his knowledge of pathology being limited to the elementary horse-doctoring books he enumerates, and we can guess what kind of knowledge that must be. It is unnecessary to state that the highest authorities in veterinary medicine have distinctly and well described both a Typhus and a Typhoid Fever as affecting horses. These authorities are not mentioned, however, in popular books for amateurs.

The charge of Neology which furnished him with a title and excuse for his paper, and was based on newspaper rumours, he is compelled at the end of his diatribe to withdraw, and he is also obliged to confess that the accusations made by him against our colleagues, Messrs. Mavor and Lepper, are likewise destitute of truth. Nevertheless, while admitting this much, he maintains his defamatory charges against the entire body of the profession. He perhaps knows, from painful experience, that it is safer to libel a body of men than an individual.

But we need not comment further upon this—one of the most vulgarly disgraceful, unmerited, and mendacious attacks to which any profession was ever subjected. Why it was ever allowed to appear in type we are utterly at a loss to comprehend. An effusion which bears untruthfulness and libel on its face, while its rancorousness is evidently, in sporting phraseology, begotten by prejudice out of ignorance, should surely not have been allowed to find its way into a respectable magazine. We cannot exempt the editor of *Baily* from a large share of blame in this indecent attempt to traduce the practitioners of veterinary medicine. When he discovered the untruthfulness and unfairness of the contribution, justice to himself, his journal, the public, and the veterinary profession would, we imagine, have prompted him to suppress it, and to have done for ever with such a writer as "J. H. S." The editor has inflicted on us a great wrong by the line of conduct he has pursued, and he has perhaps prejudiced the reputation of what we believe has hitherto been an esteemed periodical.

"Neology in the Veterinary Art.

"The deplorable death of three valuable horses which belonged to the late Baron Mayer de Rothschild has induced many country squires and owners of horses to reflect whether the veterinary art has kept pace with the spirit of the age, or, indeed, whether it has made any progress whatever during the last half-century; and the result of enquiries and of sober reflection has not been altogether creditable to the profession. With one single exception,

there has not been a book written connected with the veterinary art during the last thirty years which would not have been almost a disgrace to an old washerwoman. The exception is the 'Illustrated Horse Doctor,' by the late Edward Mayhew, a gentleman

"'Whose life was too short for friendship, not for fame,'

and whose work is a masterpiece for eloquence and precision of language, but unfortunately it contains but little that was not previously known, and has not added materially to the stock of knowledge. Mr. Mayhew, for the most part, seemed to content himself with dressing anew old facts, and presenting them in an attractive garb, illustrated by numerous graphic, and in some few instances very humerous, woodcuts.

"It is scarcely less than a reproach that the veterinary profession, as a body—the country practitioners especially—concern themselves much more with the buying and selling of horses and screws, than they do with the advancement of their art. Indeed, most of them regard a good 'deal' as a far greater triumph, or a brighter feather in their cap, than they would an important discovery in science, or a useful improvement in their art.

"Whilst horse-dealing and horse-coping are pursued with an eagerness and perseverance worthy of a much better cause, it is a deplorable fact that veterinary science and veterinary art, lamentably deficient though they be, are at a standstill. We can hardly conceive of a field which, if thoroughly cultivated, promises to bring forth fruit in such abundance and with such unmeasured fertility. When any art is in a state of degradation, every step onward is not a step in advance merely, but it is a step which brings greater credit to its discoverer than would a similar addition to the stock of knowledge in any branch of art not at a standstill like the veterinary art.

"There is no art whose professors are so boisterous and so self-sufficient as are the Vets., and there is none in which they ought to be more abashed when they reflect how little they know, how very few are the triumphs of their skill, and what a very insignificant mite they contribute to the treasury of knowledge. The poleaxe is their sheet-anchor—their sovereign remedy, their all-in-all. Does an epidemic rage, they never attempt to grapple with it, and treat it in a scientific manner according to its nature or symptoms, but they give imperious orders for it to be 'stamped out' at once, and it is very humiliating to have to record the fact that the poleaxe is

"'———— the god they adore,
Their steadfast, unchangeable friend.'

A hint that the life of a valuable horse or cow ought not to be sacrificed so unceremoniously, and without any attempt at saving it, is at once scouted with derision, and its author frowned down with contemptuous ridicule. These jubilant and self-sufficient professors know best; a large experience has taught them that there is but one remedy in such cases—the poleaxe or the bullet. Alas! we fear it is only too true that their experience has taught them that fatal fact; but what a sad experience it is! They have never tried any other plan, and they,

"'———— perched near science top,
Sit only watchful with their heavy wings,
To cuff down new-fledged talents that would rise
To nobler heights, and make the grove harmonious.'"

"We once heard a nobleman—the owner of an extensive stud of horses—make the remark that veterinary surgeons, as a body, were the most illiterate set of men in the kingdom'; and we really believe there was not only much truth, but justice in the observation. If when they 'leave college' they knew

but little, it is very seldom indeed that any one of them tries to add to his stock of knowledge, or to keep even what little he has in repair by reading or resorting to conference with wiser heads than his own. Not many days ago we had occasion to call upon a Vet. who has a large—indeed a very large practice, which requires six horses to work it. We wanted the loan of a veterinary book for a few hours: to our astonishment he did not possess it. He showed us his library, which consisted of but three volumes—not one of them worth sixpence. They were very old editions of 'White's Farriery,' 'Nimrod on the Summering of Hunters,' and 'Morton's Pharmacy.' He told us he never read them, or any other books; that he was, if anything at all, a 'pre-eminently *practical* man, and no theorist.' We much fear that he is only an ordinary representative of a very large class; a class sadly too numerous, and whose influence in some measure resembles that of the destroying angel, and who cry havoc without remorse; who deride or laugh to scorn that modest merit which in such a profession is somewhat of a satire, and which fares even worse than philosophy, which, according to the aphorism, is 'praised' though it 'starves.' Modest though sound acquirements in the veterinary art, though their possessors may undoubtedly starve, are, we fear, seldom praised. The noisy charlatans reap the harvest, and, as was well said by Cowper,

> "'Whilst others toil with philosophic force,
> *Their* nimble nonsense takes a shorter course,
> Flings at your head convictions in the lump,
> And gains remote conclusions with a jump.'

"In the present day they, more than any other class, realise the anathema of the poet of Megara—

> "'Αἰδὼς μὲν γὰρ ὄλωλεν, ἀναιδείη δὲ καὶ ὕβρις
> Νικήσασα δίκην, γῆν κατὰ πᾶσαν ἔχει.'

"The first intimation we had of the illness of Favonius was contained in the following paragraph which appeared in the *Daily News* of the 7th of August:—

"'A mysterious epidemic, which has carried off Baron Rothschild's well-known horse Restitution, together with a valuable brood mare, threatens also the life of the famous Favonius. The disease, which suddenly appeared in the Crafton stables only a few days ago, appears to be some kind of fever; but both London and local veterinary surgeons have as yet been unable to ascertain the exact malady, or to cope with it, and very little hope is entertained that Favonius will recover.'

"It will appear from this paragraph that the disease was at first 'mysterious,' and it required the death of Favonius—perhaps the most valuable horse in the world—to clear up the mystery. But at what a fearful cost was the enlightenment purchased! In reality was much light thrown upon the 'mystery,' after all? The following letter from the stud-groom appeared in the papers on the 11th of August:—

"'Deaths of Favonius, Restitution, and Tourmalin.—We have received the following letter from Mr. Charles Markham. Mentmore, August 7, 1877.—Sir,—I am sorry to inform you we have lately been most unfortunate with our stud, having lost three very valuable animals—namely, Tourmalin, Restitution, and Favonius. Tourmalin died on Tuesday, July 31st; Restitution on Thursday, August 2nd; and Favonius on Sunday, the 5th inst. Restitution and Favonius were both taken ill on the Saturday previous, and Tourmalin a few days before. Messrs. Mavor and Lepper have attended them, and pronounced the disease as Low Fever.'

"With all the respect due to Messrs. Mavor and Lepper, we submit that such a disease as Typhoid Fever is impossible in the horse; but it is the

fashion nowadays to call every disease in the human subject 'Typhoid Fever, and we suppose the veterinarians fall in with the fashion in a matter so trifling as this. We have searched through the pages of all the works on the veterinary art within our reach (and they are not a few), and we cannot discover even so much as the mention of such a disease as Typhoid Fever. We have looked in vain through the pages of 'Stonehenge'; of Darvill's 'Treatise on the Care and Treatment of the English Racehorse'; of Youatt 'On the Horse'; of White 'On the Veterinary Art,' a new edition by Spooner; Blaine's 'Outlines of the Veterinary Art,' a new edition by Mr. Steele, veterinary surgeon to the 12th Lancers; 'The Illustrated Horse Doctor,' by Mayhew; 'Horses and Stables,' by Colonel Fitzwygram; 'The Perfect Horse,' by Murray and Loring,—for we can find no mention of such a disease. Perhaps Messrs. Mavor and Lepper, who do not appear to have distressed themselves hitherto by contributing to the literature of their profession, will favour the world with a description of the nature and symptoms of the alarming and mysterious malady to which the horses at Crafton succumbed. We know that in the human subject diseases are *named* in the most reckless manner. Nineteen out of every twenty cases of chronic disorders or ailments are set down at once to the liver; whilst of acute diseases, differing as widely as possible in their onslaught, progress, symptoms, and termination, as diseases can do, are all set down to the fashionable ailment of the day—Typhoid Fever. The neologists set at defiance Lord Bacon's aphorism in which he declared that 'when men called things or diseases by their proper names, that they should then command them.' But Bacon seems to have lived in vain, and the haste displayed nowadays to jump at conclusions and to name diseases, regardless of their nature, causation, and condition, reminds us of the

> "'Fox who had a wound, but didn't know where,
> So he placed his hand on his stern and thought it was there.'

"As we did not see Favonius during his illness, it would not be presumption merely, but sheer foolhardiness, to offer a dogmatic opinion as to the real nature of his disease. The following is a suggestion merely, and must go and be taken for just so much as it is worth, which is perhaps not very much—and no more.

"We have seen several cases of horses who have been kept in high condition throughout the season being taken suddenly and alarmingly ill, with a quickened pulse and with a high temperature of body, arising, as we believe, from the want of sufficient exercise and a proper amount of ventilation in their stables. They are allowed to luxuriate in their boxes, which in the summer season are seldom cleaned out, and never at all thoroughly. The consequence is that the urine and other excreta with which the litter is saturated is evaporated by the heat of their bodies and the heat of the weather; the horses breathe an atmosphere highly charged with ammoniacal vapour, and irritation of the fauces and air passages results. There is also a highly feverish condition of the body, and the symptoms more nearly resemble those of the condition which goes by the name of blood-poisoning than of Typhoid Fever. In Typhoid Fever the predominant symptom is stupor; in the disease we have alluded to, the animals are in anything but a state of stupor; on the contrary, they are highly excited, and almost wild with anguish.

"In such cases as these, when the mucous membrane of the mouth and fauces is in an inflamed state, sometimes amounting to sloughing, the mischievous meddling of the doctors, who will insist on thrusting horse-balls down the throats of the poor sufferers, is more than reprehensible. Such remedies can do no good whatever, and the mode of their administration causes much mischief and inflicts intense suffering upon the animals. We

once saw a brute of a Vet. just on the point of administering a ball to a horse suffering in the way we have mentioned. We remonstrated against such an act of barbarity, but our remonstrance was of no avail. The wretch thrust his arm down the throat of the horse; the horse reeled about with intense agony, and when the brute withdrew his hand and arm they were covered with blood, mucus, and shreds of membrane which his violence had separated from the mouth and fauces. The poor horse died in great agony a few hours afterwards.

"If medicines are to be given in such cases, they ought to be administered in a *liquid* state; and there is only one medicine (antimony) which can be of the slightest utility in such diseases, and we are sorry to say that the preparation of that mineral most in vogue with the horse-doctors is not only the least valuable as a remedy, but the most obnoxious in other ways. We allude to the sulphuret of antimony, which in small doses is almost inert, and in large ones mischievous. It ought to be replaced by the tartar emetic, or tartarized antimony, which is not only a most valuable remedy, but cheap enough in all conscience for frequent use. It has also another recommendation—it is all but tasteless; and as it is readily soluble it can be given in the water, which in such cases the animals ought to have given them *ad libitum*, and which they will drink with avidity, as thirst is one of the predominant symptoms of the disorder. Abundance of pure water, with moderate doses of antimony, well-ventilated stables of a genial temperature, and the atmosphere rendered moist by means of steam or vapour from hot water—these are the weapons with which to combat such diseases as those of which we have been treating, and which are sadly too prevalent. These remedies, if rigidly adopted, would soon supersede the poleaxe and the bullet, and they would also be the means of saving many valuable horses whose lives are sacrificed annually by hundreds—nay, by thousands.

"Within the last few months it has been our lot to be brought into contact with a number of practitioners of the veterinary art; and we have been astonished at their almost unanimous indifference to ventilation and other hygienic remedies which did not issue from the drug shop. We did not expect much, but most certainly we were not prepared for such stolid indifference. We met with only two who had seen the 'Conversations and Recollections of Mr. Thomas Coleman,' which have appeared from time to time in 'Bailey,' and those two affected to treat Mr. Coleman's observations with disdain. We should have thought the recollections of a man of almost unexampled experience, of such great sagacity, and so keen an observer as Mr. Coleman, would have commended themselves even to the veterinary mind; but we are mistaken. If he had counselled a system of drugging or drenching, of horse-coping, firing, or poleaxing, his remarks would probably have met with respect and consequent adoption; but as he advocated humanity, on the principles of a refined common sense, he is not regarded as an 'authority.'

"Since the preceding remarks were in type we have made a pilgrimage to Crafton, and inquired into the symptoms and manner of the deaths of the three famous horses which have given rise to the writing of this article. We were not surprised to learn that none of them succumbed to any epidemic disease whatever, but that the death of each arose from an entirely different cause. One of them died from disease and degeneration of the kidneys; the second from Pleuro-pneumonia, attended with great anguish and excitement, —so much so that before death he appeared almost raving mad, and ran savagely at the walls of his box. These, we need hardly say, are not the symptoms of Low Fever. The third horse died from irritation set up by a vesicle calculus from which he had been a long sufferer. So much for the 'mysterious epidemic' of which our contemporaries made so much and knew

so little. One of them even got maudlin with his sympathy, and hoped the horse would ultimately recover when he had been dead three days!

"It is, however, but just to the veterinary surgeons who were in attendance to say that they never said or supposed the horses to be afflicted with Low Fever, of which the daily and other papers have made such fuss. Although we adhere to what we have said about the ignorance of veterinary surgeons, still, in this particular case, we think nothing was neglected by the veterinarians or by Charles Markham, and nothing could have saved two of the horses.

"Early in the summer there had been a kind of epidemic (!) disease amongst the horses and mares at Mentmore. About twenty of them were afflicted, but none of them very seriously, nor did any of them succumb to it. It was designated by a veterinary surgeon to be a sort of 'Bronchial Influenza,' whatever that may be; and was supposed to have been conveyed by one of the mares sent there.

"'Sapiens is qui se ad caucas accommodet omnes.'

"J. H. S."

GLANDERS AMONG ARMY HORSES.

SOME weeks ago a startling announcement made its appearance in the daily press, to the effect that Glanders in a malignant form had broken out among the horses of the 21st Hussars at Hounslow. We are glad to be able to state that the report is erroneous, and appears to have been due to the circumstance that during the absence of the regimental veterinary surgeon a horse was destroyed, supposed to be suffering from that disorder. The fact that some thirty or forty horses were suddenly attacked with Influenza undoubtedly gave rise to the alarming rumour. All the animals have recovered, and none of them ever presented any symptoms of Glanders.

MR. FIELD'S GIFT TO THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE name of Field has been for so long and so honourably connected with the history of veterinary medicine in this country, that it is a matter for deep regret that there is a probability of its being less prominently brought before us than in the past three-quarters of a century. The retirement of Mr. Field from the more active duties of his practice, brings to mind the fact that the history of his family, in so far as it relates to the profession, is almost coeval with the advent of veterinary science in Great Britain, and is largely identified with its rise and progress. With a generosity and a magnanimity almost beyond praise, we learn that Mr. Field has determined that the name shall not disappear from notice, but shall continue, as heretofore, to be associated with professional advancement and intellectual culture, he having presented his most valuable library and the contents of his interesting museum—both the careful accumulation of many years, and the former containing books of almost priceless value—to the Royal College of Veterinary Surgeons. We need not expatiate upon the worth of this gift to the profession. For centuries to come students in comparative pathology and in veterinary and medical literature, will accord to Mr. Field their thanks for his munificence; while we are certain the present members of the profession will gratefully accept his gift and carefully treasure it, not only for its usefulness, but in memory of a name which must always be mentioned with respect. Mr. Field has offered an excellent precedent to those of us who can benefit the profession in this

direction. We fear that for many years the claims of the Royal College have been rather overlooked, and that its utility as a museum and library—a repository of our literary and pathological treasures—has been neglected. When our new building is established, we earnestly hope that this neglect will be repaired, and that many will be found to follow Mr. Field's excellent example, and thus render our corporation more worthy of public recognition.

Proceedings of Societies.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE thirty-fourth meeting of the above Association was held at the Star and Garter Hotel, Wolverhampton, on Friday, 24th August, the President, A. B. Proctor, Esq., of Coventry, in the chair.

The following were also present :—Messrs. H. J. Cartwright, R. Cartwright, J. W. Hill, Wolverhampton ; A. Over, Rugby ; E. Stanley, Warwick ; O. J. Hills, Leamington ; W. A. Taylor, Manchester ; G. Carless, Worcester ; W. Carless, Stafford ; Green, Dudley ; Hodgkinson, Uttoxeter ; Blakeway and Blakeway, jun., Stourbridge ; S. Knott, R.A., Shorncliffe ; F. Oliver, London ; Morton, Worcester ; Hodgkins, Hanley ; Barnes, Whitchurch ; Kenyon, Ashbourn ; and the Secretary. Visitors—Dr. Manby, F.R.C.S., and Mr. Newnham.

The minutes of the preceding meeting having been read and confirmed, and the Treasurer's accounts presented and passed, the following were elected new members of the Association :—Messrs. A. Hodgkins, Hanley ; A. Green, Dudley ; H. J. Goodall, Melton Mowbray ; and H. J. Webb, Nuneaton.

Election of Officers.

The following were elected the officers of the Association for the ensuing year :—

President.—Mr. H. J. Cartwright, of Wolverhampton ; proposed by Mr. W. Carless, seconded by Mr. A. Over.

Vice-Presidents.—Messrs. A. B. Proctor, retiring President ; W. Carless, and H. M. Stanley.

Treasurer.—Mr. F. Blakeway ; re-elected on the motion of Mr. W. Carless, seconded by Mr. H. J. Cartwright.

Secretary.—Mr. G. Carless, Worcester ; proposed by Mr. E. Stanley, seconded by Mr. H. Olver.

The President then introduced Mr. J. W. HILL, who read his essay on "Distemper in the Dog."*

Discussion.—The point to which the discussion was principally directed was the similarity of the two diseases—Distemper in the dog and Typhoid Fever in man. Some diversity of opinion existed, and a lively discussion ensued, in which many of the members took part.

Dr. MANBY was strongly of opinion that there was a great similarity in the two diseases, and explained that the various forms of Distemper were also clearly seen in Typhoid in its various stages, and in different subjects. He thought this subject was one full of interest to some energetic student, and of great importance alike to man and beast. He wished that there was greater interchange of opinion between the two professions, as it would be interesting to both, and beneficial to pathology generally.

* See p. 260.

On the conclusion of the discussion, at the request of Mr. Blakeway, Mr. Hill consented to the publication of his essay in the Journals; and on the motion of Mr. E. Stanley, seconded by Mr. G. Carless, a most cordial vote of thanks was passed to him for his highly interesting paper.

Votes of thanks were also passed to the retiring President, Treasurer, and Secretary, for their services during the year.

Some papers having been received from Mr. Cowie, M.R.C.V.S., respecting the practice of vivisection as carried on in some of the veterinary schools of France, it was resolved (with one dissentient) that a letter be sent to Mr. Cowie, expressing the opinion of the members that vivisection was unnecessary for educational purposes.

HARRY OLVER, *Hon. Sec.*

Jurisprudence.

UNSOUNDNESS OF A HORSE FROM "ROARING."

AT the recent Gloucester Assizes, before Baron Huddleston and a special jury, the case of Thomas *v.* Young was heard. Mr. Matthews, Q.C., and Mr. Maddy appeared for the plaintiff; Mr. Powell, Q.C., and Mr. Anstie for the defendant.

The action, which was one of interest in itself, was brought on a cheque for £150, which had been drawn by the defendant to the plaintiff's order, and afterwards payment of it stopped, under the following circumstances:—The plaintiff, who was a gentleman of position in Glamorganshire, and who had been the sheriff of his county, living at the Heath, near Cardiff, being anxious to sell a hunter, took it to the Islington Horse Show last June, and entered it in the hunters' class. The horse, which was named Pembroke, was a valuable animal, having cost Mr. Thomas £250, and having won the first prize at a local show in Wales as a heavy-weight hunter. According to the plaintiff's account, which was corroborated in certain particulars by his groom, and by a gentleman—Captain Dighton—who was with the defendant, Mr. Bernard J. Young, of Richmond, near Sheffield, was attracted by the appearance of the horse at Islington, and expressed a wish to try it. Mr. Thomas said he might try it when and how he pleased; and the defendant then took the animal outside and rode it up and down the street for a quarter of an hour or twenty minutes. Upon his return he said the horse grunted a little, but he was prepared to give the plaintiff £150. The plaintiff at first declined the offer; but ultimately, rather, he said, than take it back to South Wales, and being anxious to sell the horse, he consented to take £150; and it was agreed that the defendant should send him a cheque to Arthur's Club. This was on Friday, the 8th of June; and on the following Monday the plaintiff, who had been obliged to return to Wales without going to Arthur's, found, on his arrival, two letters awaiting him from the defendant. In the first of these, dated the day of the sale, the defendant enclosed a cheque for £150 to the plaintiff's order, with the following endorsement on the back:—"For a chestnut gelding, Pembroke, five years old, warranted perfectly sound, free from vice, and all right." In the second letter, dated the 9th, the defendant said the horse had been examined by a veterinary surgeon, who had telegraphed to him that the horse was a roarer. "With this advice," the defendant wrote, "of course I cannot keep the horse as a sound horse, but as I believe you thought the horse was sound, and I do not wish to inconvenience you, we had better meet and see what is to be done." The plaintiff, in reply to this letter, wrote: "You bought my horse at your own price,

and without any warranty at all. I told you all I knew about him, and what I had been doing with him. I most certainly was not aware that the horse was unsound, and it was hardly likely that the horse should have been commended in the hunters' class had such been the case." The defendant to this replied that he only paid £150 on the condition that the plaintiff sold the horse as sound, and he certainly should not keep it. The defendant then stopped payment of the cheque, which had been endorsed and presented by the plaintiff, and sold the horse by auction. The price which it realised was £55 13*s.*, and this sum the defendant paid into court.

The plaintiff was cross-examined why he endorsed the cheque after he had seen the warranty written on the back by the defendant; and he explained this by saying he did not know what the legal effect of striking out the words might be, and as he had repudiated the notion of a warranty in his letter to the defendant before he presented the cheque, he thought it unnecessary to do more.

Mr. B. Cartledge, of Sheffield, Fellow of the Royal College of Veterinary Surgeons, ex-President, and Member of the Court of Examiners, was called. He said he examined the horse on the 9th of June, immediately on its arrival at Sheffield from London, and found the animal unsound in its wind. This he at once telegraphed to the defendant. The disease must have existed for some weeks at least. He examined the horse again on July 13th, and he was still a "roarer," and would remain a "roarer." He was not only an unsound horse, but for the purpose of hunting was, comparatively speaking, of no value.—Cross-examined: "Grunting" and "roaring" were two different things. "Grunting" was a habit and suggestive of "roaring," but of itself was not an unsoundness. "Roaring" was a disease, and was unsoundness. The case of the horse Pembroke was clearly one of disease.

Mr. Hoole, veterinary surgeon, Sheffield, had likewise examined the horse, and found him a "roarer." He confirmed the evidence of Mr. Cartledge.

The defendant, too, was called, and gave his own account of what had happened. He said, after trying the horse, it "grunted" a little, but he did not attach much importance to this, knowing that it had been severely examined at the show and had been commended. As to the actual sale, his account was that he had bought the horse after having said to the plaintiff, "I have had no fair trial, but I like him; and if you will sell him as a sound horse, and all right, I will give you £150."

The learned Judge asked the defendant if anything was said about the age of the horse, or being free from vice; and the defendant admitted these words had not been used in conversation, but said he had put them into the endorsement, because he thought that was the usual form of a warranty.

The learned Judge, in summing up the case, said the burden of proof rested on the defendant. If the horse was sound at the time of sale their verdict must be for the plaintiff; but if it was unsound, and being unsound there was a warranty by the plaintiff that it was sound, their verdict would be for the defendant.

The jury immediately found for the plaintiff, and his lordship gave judgment for £150, less the sum paid into court.

Obituary.

We much regret to have to announce the death of Mr. E. S. Edgar, of Dartford, on August 17th, at the early age of forty-three years. Mr. Edgar graduated in 1861, and was much valued and respected in and around Dartford, where he had an extensive practice.

On the Continent, the death of M. Laroque, ex-professor of physical science at the Toulouse Veterinary School, is reported. The deceased bore a high reputation as a man of science, and died on his property at Montmorin, canton of Boulogne-sur-Gesse, of the malady which had necessitated his retirement from active life.

The heaviest loss, however, which veterinary science throughout Europe has sustained for very many years, is in the decease of Professor Gerlach, Director of the Berlin Veterinary School, who was justly considered one of the most distinguished scientific veterinarians in Europe, and one of whose valuable contributions to science—that on Tuberculosis—we alluded to at some length in the last issue of the *Veterinary Journal* (p. 203). From an esteemed correspondent, who was a pupil and affectionate friend of the deceased, we have received the following sympathetic obituary notice, which obviates the necessity for our dwelling longer on a bereavement which all lovers of scientific progress must deeply mourn, and which deprives Germany of one of her best men :—

IN MEMORY OF ANDREAS CHRISTIAN GERLACH,

Late Director of the Royal Veterinary Institute Berlin, Prussia. Born in 1811, *at Saarstadt, in the Harz Mountains; died at Berlin, August* 29, 1877, *aged* 66 *years.*

BY A STUDENT.

And I hear the voice of coming generations saying, "Well done good and faithful one: you were indeed our 'Standard Bearer of Truth.'"

It is not my purpose to write even a notice of the life of our late Director : for that duty others of his countrymen are far better fitted, and it will undoubtedly be done. For me comes the more difficult task to describe the friend, and still not overdo the work of judging the man. It is of Gerlach as Director, as scientist, as man, I would say a few words, because I believe they may be of benefit to many a student now working his way upward. A brief notice of his life will, however, be a fitting introduction to this. Born in 1811, we find him graduating from the Berlin school in 1833 as a veterinarian. He took to the profession from his intense love of animals—a passion which only ceased with his life, and which his dumb friends often returned to the best of their ability. From 1833 to 1844 he practised privately in and around Halbestadt, in Saxony, being in the last year appointed official veterinarian of that district. In 1847 we find him as assistant, and then as teacher, at the Berlin school. In 1859 he received the honourable appointment of Director of the Royal Veterinary School at Hanover ; and between this time and 1870 were made the greater part of his original researches, which have gained acceptance not only in veterinary but human medicine. Gerlach was the first to deny the abiogenesis of Glanders, and the truth of his assertions are being daily confirmed. To him are also due the primary notions, and the investigation into the infectious nature of the disease called Tuberculosis in cows ; and the obstinacy with which he defended his views was greatly owing to the opposition he received from many members of his profession. As the case now appears, Gerlach's position becomes each year more strongly supported, and that of his opponents weaker. In 1870 he was called to the Directorship of the Royal School at Berlin ; and here began his master-work, or rather he had a better opportunity to attempt to promote the idea of his life—viz., the introducion of a scientific method into veterinary education. In this work he had too

much to overcome to be more than partially successful; and, consequently, the late Director of our school is not alone to be judged by the work which he did, but by the work he would have done. Neither the Berlin school alone, nor the profession in Germany, are the losers by the death of this exclusive scientist. The veterinary profession of the world has, in the writer's opinion, lost its *Standard Bearer*, the leader of its *Forlorn Hope*. Bourgelat was indeed the one to lay the foundation of veterinary education; but Gerlach was no less the first to make a scientific study of the requirements of veterinary education: narrowing his entire energies to the one point—the introduction of a scientific method into our teaching and practice. Our late Director was indeed a Luther in the school of veterinary thought. In some respects he seemed to be a very one-sided man; but to those who knew him better, he was a man bending everything, sacrificing everything, for the success of an ideal object. That object was the elevation of veterinary medicine to a science, and the fitting of it to take its place in the bright halo of the sister sciences of the world. For this he gave his life—for this he made a martyr of himself for years, bearing with great dignity ill appreciation and bitter opposition from those he was giving his life to serve. To others there may have been but one Gerlach, and that the autocratic Director of the school—the man who would neither hear nor bear a word of contradiction; to others, and among them the writer, there was another Gerlach—the sincere friend who greeted me with all the kindness of a father on my arrival in a foreign land, and whose watchfulness, deep interest, and encouraging words of advice, as well as caution, for the past two years, are only to be compared to the tender care of a mother. The autocrat has been at the same time the dearest friend of my life.

The entire character of the man might be written in one sentence: "Be sure you are right, then go ahead regardless of cost." That he did this, every one will testify. He was a hard and exact student of his position and responsibilities, estimated exactly the worth and ability of each of his assistants, and knew much better than any other leader of our calling, judging by their writings, the course which can alone succeed in the elevation of our profession. He was frequently accused of want of regard for the opinions of others. Persons who, in general, make such accusations, have very little knowledge of how the world has been made. Generosity towards the opinions of others is a virtue in the general relations of society, but under some circumstances, if continued or indulged in, becomes a weakness.

Such a place is the one filled by our late Director. In judging of Gerlach's character, the writer is not considering him in the narrow limits of Director of a school; but as the ideal man, the true Gerlach, the standard-bearer of our profession. Another may with honour fill his place as Director, but this place of greater honour is the world property, and open to the world. Gerlach was, as has been said, looked upon as unjust, and as ignoring the opinions of others. Those who said this little understood the true nature of the man of whom they were speaking. Nothing ever came from Gerlach without mature reflection; nothing was ever done by him which was not intended for the elevation of our unfortunate art into a science. Every man selected by him for any position as teacher in the school was the one best known to him. That he did not make mistakes would be giving him a character above mortals. That he did not endeavour to do only his duty, but his ideal duty, would be false to deny. This apparently cold man was the most enthusiastic, yet practical idealist, the writer has known. His course was only determined after the most careful consideration of all sides. He consulted with those to whom he was himself responsible—not with those it was his duty to direct. Everything was by him judged according to his ideal light: to this perfection he would attain; to this end all must be

sacrificed. Great practitioner though he is said to have been, he knew full well that this much lauded practical education was, and is, the *curse*, the carcinoma, consuming our vitality to-day. He did not neglect the practical side, but he would put it where it should be, where it must be sent, before we can advance to a science,—that is, as a worthy and necessary assistant to mankind. Science is not practice alone, but this much lauded practical education is of itself little better than educated quackery. Knowing this, knowing the right, strong in the self-consciousness of right and his own ability, Gerlach went onward, entirely regardless of men. Many and many a time, in speaking with the writer regarding his life's work, would he say, "My friend, would we could consult more with those we would work with!—but it cannot be; as you go on with your work, you will find this one would modify that, and another this part of your plan, and the end would be that nothing of value was done; study, think, weigh all things, and, as said before, be sure you are right and go ahead." Was Gerlach alone in thus reading the art of human progress? Emphatically No! The great luminary of human medicine, and the great leader of humanity in Germany, Virchow, as well as other men of the same kind, living and passed away, have all found this to be the sole pathway to success. So it will be to eternity: the great must walk alone. Gerlach was no exception to this rule, and so it will be with the one who would take his place as leader of the forlorn hope. All are willing to testify to his great work in contributing to the better appreciation of the profession in his native land, and the day will surely come when the judgment the writer now gives will also be accepted. Gerlach sacrificed all thought of himself; veterinary science was his idol, and like the Hindoo enthusiast who allows himself to be crushed by the wheels of his advancing god, so was Gerlach crushed; he sacrificed himself for our cause. Fellow-students in Germany, let us make our late Director our study; educate yourselves broadly,—but when our time comes, when we too must select the point upon which we will work for our professional advancement, we too, like him, must concentrate all our energies and hold them well in hand for this one work; like him we must consider no sacrifice too great, no work too hard. We have before us a sacred duty—I as a foreigner, you still more as his countrymen, all of us as men and veterinarians—to see that the tree of science, which he planted and which he gave his life to nourish, does not suffer for want of support. The best monument we can build to his memory is to do our part in the completion of his work, and our work too. Let us see which one of us can fill the place which it is impossible for your country yet to fill.

The question of education is the one demanding the most careful application of scientific methods. It was Gerlach's hope to have lived long enough to bring the entire system of the Berlin school into the hands of specialists. It was Gerlach, more than any one man, who believed in the centralization of the veterinary education of his country at one well-appointed institution. A few months before his death, he laid before the writer his ideal plan for the future: telling him of the many hindrances in his way—the greatest of which was want of funds; even then he hoped against hope to bring it about. Unknown, I think, to his colleagues, was the fact that he nourished a secret dislike to the present plan of having our special pathology taught by one or two men. "Divide your work: no time to study—no time to study," he would again and again repeat, and warn me against falling into this mistake in America. "No progress so," was frequently upon his lips in our many conversations. We may never cease to be grateful for his last work,—the introduction of a specialist as a physiologist to our school, and a laboratory, instruments, vivisection building, and everything possible so far as his means would allow. From this Professor

we have a right to expect much work of immense value, so soon as all is ready. This was the beginning; the ending is the sacred work of other hands. In his seven years' service, the expenses of the school have become doubled, and the institution, from a very inferior position, has taken the first rank in Europe. His printed works bear the character of the man—one and all; they can be termed *Contributions to Science*, for they are as valuable to human medicine as to the veterinary profession. Those having volume form are :—"Krätze u. Raude" (Scabies), "Allgemeine Therapie' (General Therapeuty), "Gerichtliche Thierheilkunde" (Veterinary Jurisprudence), and "Die Fleishkost des Menschen" (The Flesh we eat). Search where you will among his writings, you find nothing but the exclusive scientist. The name of Gerlach can never be associated with the production of those curses to our profession—*popular works on the diseases of our domesticated animals*. This apparently cold man was too deep and tender in his nature, to contribute thus to the torturing of the animals he loved, by half-educated quackery. His hatred of quackery was glorious; he would punish it with imprisonment for life had he had the power. Quacks were as brutes, torturing the truest friends he ever had—our dumb animals.

He leaves two sons, with their wives, to mourn his loss. How good a father he was, the writer well knows; what interest he took in the work of the student who would study, all can testify. Let us one and all take up the work still so incomplete, and do equally well our part towards its completion.

Army Veterinary Department.

Gazette, September 4.

9TH LANCERS.—Veterinary-Surg. J. A. Woods, from the Royal Artillery, to be Veterinary-Surg., vice J. P. Adams, transferred to the Veterinary Department.

ROYAL ARTILLERY.—Veterinary-Surg. W. D. Rogerson resigns his commission.

VETERINARY DEPARTMENT.—Veterinary-Surg. J. P. Adams, from the 9th Lancers, to be Veterinary-Surg.

Gazette, September 14.

Brevet-Colonel Sir F. W. J. Fitzwygram, Bart., from Lieut.-Colonel, half-pay, late 15th Hussars, to be Major-General, dated March 23, 1869.

ROYAL ARTILLERY.—First Class Veterinary-Surg. G. Evans, M.D., from the Army Service Corps, to be Veterinary-Surg., vice J. A. Woods, transferred to the 9th Lancers.

Notes and News.

TRICHINOSIS AND MEASLES IN PIGS IN GERMANY.—In disproof of the oft-repeated assertion that only one pig in 10,000 is the subject of Trichinosis, the *Deutsche Landwirthschaftliche Presse* quotes from a contemporary some particularly uncomfortable statistics. Between July 1875 and July 1876, 20,500 swine were insured against this disease, and 2000 against Measles, with the National Live Stock Assurance Society, at Cassel. Of this number

fifty-seven, or 1 in 360, contracted Trichinosis. It further appears that within a few months thirty-one claims on account of measly pigs were made in Hanover, one in Silesia, and twenty-three in the town of Cassel. On account of this high proportion, the office declined to issue any further policies as against Measles. The proportion of cases of Trichinosis to the total number of swine insured was 1 in 300 in Cassel, 1 in 450 in East and West Prussia, and 1 in 230 in Silesia and Posen. Since July 1876 the proportion of affected animals in the provinces near the Russian frontier has been even more unfavourable, and many of the insured have found 10 or even 15 per cent. of their pigs thus diseased. Among insured and uninsured together it may be safely assumed that at least 2 per cent. of the swine in these districts suffer from Trichinosis. It is added that at first only animals of the English breed were attacked, but the disease is now distributed among all races, more especially in those imported from Russia.

Euphorbia Candelabrum.—The Ovaherero tip their arrows with this vegetable poison, and the Hill Damaras introduce it in a liquid state into pools where wild beasts are known to drink; and the flesh of any animal thus destroyed is perfectly wholesome. But its most remarkable property is, that whilst it invariably kills the *white* rhinoceros, it is freely and harmlessly partaken of by the *black* species, whether the plant itself be eaten or an infusion of it drunk. The juice of the *Euphorbia candelabrum* has a milk-white appearance, and is very gummy, with an acrid taste. The wild bee is occasionally known to extract its food from the flowers, and in such a case the honey becomes more or less poisonous. Mr. Moffat mentions an instance of his party suffering much pain and inconvenience from having partaken of such honey. They felt as if their throats had been on fire.—*Andersen's Lake Ngami*, p. 81.

A Deadly Locality.—Froebel, in his journey from the coast of Texas to San Francisco, remarks, on coming to Carrizo Creek, on the borders of the Colorado or Stony desert: "Throughout this whole region—from the edge of the desert plateau through the gypsum ravines, as far as Carrizo Creek—the ground is strewn with the bones and skeletons of thousands of sheep, cattle, mules, and horses. The reader may form an idea of this scene, from the fact that of a single flock of sheep proceeding the year before from Northern Mexico to California, six thousand lay dead on this spot. Many of the dying animals appear to have crept in the pains of death into holes and corners among the wildest rocks. I found in these places numbers of skeletons wedged into almost inaccessible corners and narrow fissures. I have heard various opinions respecting the extraordinary mortality among animals driven from the Colorado across the desert, especially on the Carrizo Creek—a watering-place against the dangers of which we were strongly cautioned. Some asserted the waters to be poisonous; others thought the circumstance of drinking too freely, after a long thirst, offered sufficient explanation of the fatal effects; while others attributed them to certain plants growing in this neighbourhood, which are only eaten by animals when suffering extreme hunger. The plant pointed out to me as poisonous was a small *Euphorbia* covered with a grey film, which might justify this supposition. Another opinion appeared quite natural—that on approaching the termination of the desert the strength of the animals, exerted to the utmost by toil, hunger, and thirst, should at last give way. Probably the truth may be that these different causes combine to produce the result.—*Seven Years in Central America*, p. 536.

Malagasy Cattle Pits.—On his journey to the capital of Madagascar, Ellis writes: "Here I saw for the first time two pits called fahitra, in which oxen are confined and fattened. The pits, which were close to the houses,

were somewhat larger than the animal, and a little deeper than the top of his horns. Over one of these a covering of thatch was placed; and the food of the animals, fresh wet grass, was placed upon a ledge cut out of the clay sides of the pit, in a rude sort of rack."—*Visits to Madagascar*, p. 334.

POISONOUS SPIDERS IN RUSSIA.—At the present time there is an unparalleled increase of poisonous field spiders in the littoral provinces of the Black Sea, causing by their venomous bite great sufferings to the men and animals employed in transporting stores to the Russian army. According to the *Nikolaeff Vestnick*, the bite of these noxious insects produces first a sharp local irritation, and afterwards a swelling all over the body, especially towards the abdominal regions. Occasional cases of death occur, but these are rare; the sufferer, in the generality of instances, recovering at the end of three days. Poisonous spiders were first observed in Russia in 1875, chiefly in the south central provinces. Since then they have developed so largely as to become quite a plague, and now cover the whole of the provinces bordering on the northern coast of the Black Sea. Their rapid increase is ascribed to the destruction of forests—which, by causing a diminution in the number of birds and insectivorous animals, has deprived the country of its natural check against them.

DOGS.—An official document, printed by order of the House of Commons, showed that last year the number of dogs registered in Ireland was 339,011, and the amount of dogs' licenses received, £33,901 2*s.*; and the amount paid to towns, etc., after deducting expenses, £25,976 16*s.* 5*d.* From another paper it appears that in England and Scotland, in 1875, the number of dogs licensed was 1,302,158, and the amount of £325,540 paid to the Inland Revenue Board.

SPONTANEOUS GENERATION.—At a recent meeting of the Royal Society Professor Tyndall made a communication on "Further Researches on the Deportment and Vital Resistance of Putrefactive and Infective Organisms, from a Physical point of view." He first gave a *resumé* of the work done in the spring of 1875-6, which went conclusively to show that in the atmospheric conditions then existing in the laboratory of the Royal Institutions five minutes' boiling was found to be sufficient to sterilize the infusions in any of the many hundred flasks and tubes experimented on, both animal and vegetable infusions being used. In the autumn of 1876 Professor Tyndall resumed his experiments with hay infusions, but found that some, instead of needing only 5 minutes to sterilise them, required 15 minutes. The way in which he found that not only did the hay behave differently than in the previous experiments, but that also nearly all the tubes of other infusions experimented on in the Royal Institution showed decomposition, and how he traced all this to dry old hay in the laboratory, he described to the members of the Royal Institution in January last. Led thus to examine the old hay, he has found that in some cases the bulbs charged with infusion of it were not sterilised with even four hours' continuous boiling, and in some cases germs were found so indurated that four, or six, and in one case even eight hours, were not sufficient to deprive them of life. It is a question of obvious interest to the scientific surgeon whether those powerfully resistent germs are amenable to the ordinary processes of disinfection. They have been found competent to cause infusions, both animal and vegetable, to putrefy. How would they behave in the wards of a hospital? And, again, how do they act in establishments for preserving meat and vegetables in tins? The shaking of a bunch of desiccated hay might make the process of boiling quite nugatory. Professor Tyndall's later researches have made known to him that discontinuous heating for a short time will produce the death of the germs. An aggregate of four minutes in the one case will

effect what for continuous hours in the others could not. A temperature, too, far below the boiling point suffices. The fully-developed bacterium is killed at 140° Fah. Fixing the mind's eye upon the germ during its passage from the hard and resistent to the plastic and sensitive stage, it will appear in the highest degree probable that the plastic stage will be reached by different germs in different times. Some are more indurated than others, and require a longer immersion to soften and germinate. For all known germs there exists a period of incubation during which they prepare themselves for immergence as the finished organism, which have proved themselves so sensitive to heat. If during this period, and well within it, the infusion be boiled for even a fraction of a minute, the softened germs which are then approaching their phase of final development will be destroyed. By repeating this process every ten or twelve hours, and before the least sensible change has occurred in the infusions, each successive heating will destroy the germs then softened and ready for destruction, until after a sufficient number of heatings the last living germ will disappear. Another means of destruction has been found to be to deprive the infusions of air. Unboiled infusions deprived of air by five or six hours' action of the Spreugel pump are reduced to permanent barrenness. Like higher organisms, the bacterial germs are poisoned by the excess, and asphyxiated by the defect of oxygen.

EPIZOÖTY AMONG FISH.—Large numbers of dead and rapidly-putrefying fish having been found of late on the shores of the Barlewitzers Lake, in West Prussia, the sanitary inspector of this district has been instructed to inquire into the causes of the fatality. After due investigation he has come to the conclusion that it is chiefly attributable to the decay of vegetable matter and the development of countless algæ, whereby the oxygen necessary to the life of the fish is largely absorbed, more especially as the water has been but imperfectly aërated of late, owing to the long continued absence of winds. Some danger to the inhabitants of the district is feared, if this state of affairs should continue, as it is difficult to prevent them eating the diseased fish, though numerous dogs, cats, fowls, and ducks have already died from feeding upon them. The local police have orders to collect and bury the dead fish daily, and also to urgently warn the people against eating them, and against drinking water from the lake.

Correspondence.

NITRITE OF AMYL.

To the Editor of the VETERINARY JOURNAL.

SIR,—I was pleased to see, in the August number of your *Journal*, that the case I reported as having been cured by this drug had given rise to further observations on its physiological action. Allow me to correct one or two remarks made by Mr. Allman. He says that the remedy is not new: now, I must maintain my first assertion that it is so, with regard to veterinary practice; and, in fact, in the latter portion of his notes he admits it. If he will refer to my report, he will find I say, "It has been tried on the rabbit and frog, and latterly, in a few cases, on the human subject." I carefully watched my case, and the action the drug had on the patient, and I failed to see any fulness or distention of the head. The pain was relieved instead of increased, and I could not detect any difference in the action of the heart;

the pulse was always about the same, and the breathing after an administration was considerably quieter. I intend persevering with this drug in the next case that comes under my notice ; and I hope others will do likewise, and not cry out before it has had a fair trial. In the meantime, I would just remark that some medicines are found next to useless on the human being, and prove very successful in the lower animals.

I am, yours respectfully,

ALEXANDER LAWSON.

Manchester, *September 8th*, 1877.

GLANDERS OR INFLUENZA.

To the Editor of the VETERINARY JOURNAL.

SIR,—In this month's *Journal*, I observe under the above heading the reports of two important trials. In the first, I find a professional witness is made to say that one of the acknowledged tests of Glanders is the discharge from the suspected animal floating or sinking in water. Surely there has been some mistake in reporting this evidence !

In the next case reported, I find Professor McCall says that in Glanders "they had always miliary tubercles in the lungs." Now, from the high position that Professor McCall holds in the profession, his evidence must necessarily carry great weight with it ; and as this is an important question, I should like to ask, through your *Journal*, the opinion of the profession upon the subject. I may say that I have made *post-mortem* examinations of what I have thought were undoubtedly glandered horses, and my experience does not bear out Professor McCall's opinion.

Yours truly,

Newcastle-on-Tyne. C. STEPHENSON.

'CLASSICAL EDUCATION AND SCIENTIFIC ATTAINMENTS."

To the Editor of the VETERINARY JOURNAL.

SIR,—To Mr. Greaves' query there should be but one sufficient answer : "The importance of classical education and scientific attainments cannot be overrated." Not that practical instruction and knowledge are to be lost sight of,—on the contrary ; but as the one is useless without the other, so the standing of the veterinary surgeon will never be better as long as the ornamental element is so sadly wanting. That education tends to refinement, no one will venture to deny ; and although it is possible for vulgar men to be scientific, such are vastly in the minority ; and for our "leaders of thought" to advocate anything but a combination of scientific and practical instruction in these days, would be suicidal and pusillanimous. The fears and statements of the "one learned Professor" are, I feel sure, unfounded, and portray the natural bent of *his* mind ; the very introduction of practical examinations of late years sets aside Mr. Greaves' forebodings. In my humble opinion there is nothing radically wrong in the method of teaching ; the wrong *has* been in admitting to the Colleges many who would scarcely pass muster at a School-Board examination, and were incapable of appreciating the scientific portion of their curriculum. Give the world to understand that the profession itself is worthy of classical and scientific acquirements, and the student-ranks will soon be filled from the better class of the community, who would naturally be above vulgar associations, and so the "end"—which, after all, is the advancement of our calling—will be gained. Of the vulgar associations it is

unnecessary to speak : they will present themselves prominently, and, I regret to say, sometimes temptingly, only to be shunned by the higher feelings that attend education.

I am, sir, yours obediently,
HENRY DYER.

Knightsbridge, *September 14th*, 1877.

VACCINATION IN CANINE DISTEMPER, AND RABIES CANINA.

[We have been requested to publish the following correspondence. It is indeed astonishing to find any one occupying the position of the Hon. G. F. Berkeley, persisting, without any knowledge of the subjects discussed, in promulgating such absurd and dangerous notions. It will be seen that the correspondence refers to Mr. Hill's paper on Canine Distemper, which appears in the present issue of the *Journal*.]

"*To the Editor of the 'Morning Post.'*

"SIR,—Having read in your impression of this day's date what was termed an 'interesting paper' on 'Distemper in the Dog,' read by 'Mr. Hill, a veterinary surgeon at Wolverhampton,' in which paper it was denied that vaccination had any power over the Distemper, in the cause of humanity I most distinctly affirm that vaccination, properly accomplished under the hands of the medical profession, never fails in preventing Distemper. This assertion I make after more than sixty years' experience in my large kennels of staghounds, foxhounds, and other dogs. Be it also understood, that none but gentlemen in charge of large parishes, and in the medical profession, can give the fact a fair trial, as they alone have access to the best lymph. To this day Mr. E. P. Philpotts, M.D., of Poole, kindly officiates for me. A veterinary surgeon has not the means at his disposal to give the experiment a fair trial.

GRANTLEY F. BERKELEY.

"Alderney Manor, Poole, *Sept. 4th.*"

"*To the Editor of the 'Morning Post.'*

"SIR,—In reply to a letter in the *Morning Post* of yesterday, by the Hon. Grantley F. Berkeley, respecting a paper I recently read before a meeting of the Midland Counties Veterinary Medical Association, on 'Distemper in the Dog,' I ask your kind permission to submit the following remarks for insertion in your next issue. I observe your correspondent heads his letter 'Vaccination as a Cure for Distemper in Dogs.' My remarks on the subject were confined to it as a 'preventive' measure. The former is to me a new feature in the treatment of the disease, and would, I do not hesitate to say, be as futile as the latter. The Hon. G. F. Berkeley is evidently ignorant as to the means placed at the disposal of veterinary surgeons for testing vaccination ; and his ideas with respect to the obtainment of lymph are but shadowy, and certainly not a flattering compliment to medical practitioners in small parishes, nor yet very comforting to their patients. Wolverhampton, however (which, by the way, is not a small parish), is honoured with the presence of an efficient and eminent staff of medical men, none of whom assume the qualifications of a profession to which they do not belong, and who have at all times courteously supplied me, when I have required it, with *good lymph*, equal to Dr. Philpott's. I will not take up your valuable space in defending the reflection which the hon. gentleman has thought fit to cast on the veterinary profession. Suffice it to say, there have been and still are veterinary surgeons of quite as extensive experience, with this important addition, *united*

with science, as the Hon. G. F. Berkeley's. I have not had sixty years amongst dogs, but for fifteen years I have been an owner and breeder of the animal; and my professional experience has been sufficiently long to prove the utter fallacy of vaccination as a cure or preventive of Distemper. And for 'the cause of humanity,"—in other words to prevent useless and foolish torture,—I again make the remark that has excited the hon. gentleman's contradictory powers: viz., 'Vaccination has been extolled and condemned —condemned justly, inasmuch as there is not a shade of analogy between Canine Distemper and Small-pox.' In conclusion, I quite fail to see that the fact of Dr. Philpott's officiating as canine vaccinator to the Hon. Grantley F. Berkeley in any way tends to strengthen the argument of the latter.

"I remain, sir, yours obediently,

"Wolverhampton, *Sept. 7th.*" "JOHN W. HILL, M.R.C.V.S.

"*To the Editor of the 'Morning Post.'*

"SIR,—Having seen in your impression of yesterday a letter from Mr. Hill, a veterinary surgeon, purporting to be a reply to a previous letter of mine on 'Vaccination and Distemper in Dogs,' I scarcely think it worth while to say any more save that I never said that 'vaccination' was 'a cure for Distemper.' I asserted that it was a never-failing 'preventive' of that devastating disease, if resorted to efficiently and in time. Surely over sixty years' practice among thousands of hounds and dogs, 'for love, not money,' may compete with the casualties brought under a veterinary surgeon's notice: but of this enough. I conclude my letter with the following recorded facts, commencing with the 'Durham foxhounds.' Whole packs of hounds in Durham, Essex, and other places have been doomed to cruel extermination on the mistaken verdicts of veterinary surgeons. Thousands of people have been rendered nervously unhappy, moved by the horrors falsely attributed to a disease which in their cases never existed, and have died under the worst torments of afflicted minds, and all this because men in peculiar situations have ventured to give a verdict on that which they knew nothing about. To conclude: of this I am certain, that the veterinary practitioners have killed more dogs than they ever cured, and by their rash assertions as to 'Hydrophobia' have made more misery for the human mind than their hereafter and perpetual silence on the subject could obliterate. If you prevent Distemper in dogs by 'vaccination' well performed, you decrease the madness in dogs, which in numberless cases arises from the effects of the 'common Distemper,' but which is often vulgarly termed 'Hydrophobia.' Dogs utterly insane through Distemper, and for the time mad to all intents and purposes, will most greedily lap or lap at water; but the hydrophobic and deadly diseased shrinks convulsed by its approximation to fluid, and hence arises the term applied to it long ago by the Greeks. If, then, the stupid annunciation that hydrophobic dogs are not terrified by the sight or touch of water, why use the dreaded term? Why not call the bite arising from fatally affected teeth by some more applicable name? GRANTLEY F. BERKELEY.

"Spetchley Park, Worcester, *Sept.* 11."

To this Mr. Hill replies as follows:—

"DOGS AND VETERINARY SURGEONS *versus* THE HON. GRANTLEY F. BERKELEY.

"*To the Editor of the 'Morning Post.'*

"SIR,—In reply to the Hon. Grantley F. Berkeley's second letter, in your issue of to-day, I have only to observe, his remarks are so palpably devoid of pathological knowledge that it is useless for a professional man to discuss such matters with him. With regard to his grand charge against veterinary

surgeons, it is so extremely absurd, and so utterly incorrect and unfounded, that undoubtedly it will be treated by the majority, if not the whole, of the profession with that silence which is usually indicative of contempt.

"As to the *erroneously* termed 'Hydrophobia.' The dangerous ideas the Hon. Grantley F. Berkeley endeavoured (*unsuccessfully*) to propagate some years ago are too well known, and estimated at their just value by a sensible British public, to need comment upon here. Suffice it to say that *the misery of the human mind*, which he so charitably accuses us of causing, would indeed have been very great had not men who knew better contradicted the ridiculous 'water doctrine' enunciated by the Hon. Grantley F. Berkeley.

"In conclusion, if your correspondent were well informed on the latter subject he would know that 'Hydrophobia' is *not* a term used in veterinary practice, and thereby have escaped tumbling into another blunder.

"I am, sir, yours obediently,

"JOHN W. HILL, M.R.C.V.S.

"Wolverhampton, *September 13th*, 1877."

CORRIGENDA.

AT p. 176, line 19, of our last issue (Dr. Evans' paper), for "Now I am sure that he will allow that there *must* be an enormous increase of urine excreted, without any increase of degraded tissue products," read "Now I am sure he will allow that there *may* be an enormous increase," etc. At p. 179, line 23, for "farrier surgeon" read "farrier serjeant."

ANSWERS TO CORRESPONDENTS.

Communications from Messrs. R. S. Reynolds, G. Wyer, F. S. Billings, Hepburn, Parker, Kirk, Merrick, and others, will appear in our next.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from B. A. W. Powell, 3rd Light Cavalry, Saugor; H. Olver, Tamworth; J. W. Hill, Wolverhampton; F. S. Billings, Berlin; W. A. Edgar, Dartford; A. Lawson, Manchester; C. Stephenson, Newcastle-on-Tyne; R. Paterson, Downham Market; G. Wyer, Donington, Lincoln; R. S. Reynolds, Liverpool; H. Dyer, London; T. H. Simcocks, Drogheda; W. Hepburn, Coldstream; J. M. Parker, Birmingham; J. Kirk, Edinburgh; F. H. Merrick, Northampton.

BOOKS: *F. H. Lascelles*, Horse Warranty on the Purchase and Sale of Horses; *J. Cowie*, Reminiscences of the Medical and Veterinary Arts; *G. Mitchell*, Cumberland Disease; *F. Roloff*, Die Rinderpest; *G. B. Ercolani*, Dell' Onychomykosis dell' Uomo e dei Solipedi; *M. L. Lafosse*, Traité de Pathologie Vétérinaire (vols. i. and ii.); *T. M. Dolan*, The Etiology of Typhoid Fever; *George Nevile, M.A.*, Horses and Riding; *Robert Moreton, M.R.C.V.S.*, Horse Breaking.

JOURNALS: *Journal of the Anthropological Institute; Annales de Méd. Vétérinaire; Archives Vétérinaire; Recueil de Méd. Vétérinaire; Oesterreichische Vierteljahrs für Wissenschaftliche Veterinärkunde; Deutsche Zeitschrift für Thiermedicin; Archiv fur Wissenschaftliche und Practische Thierheilkunde* (two parts); *Wochenschrift für Thierheilkunde und Viehzucht; Practitioner; Edinburgh Medical Journal; Lancet; Medical Press; National Live Stock Journal; Melbourne Medical Record; Baily's Monthly Magazine; Repertorium der Thierheilkunde; Der Thierarzt.*

NEWSPAPERS: *Sportsman* (two copies); *Farmer; Mark Lane Express; Agricultural Gazette; North British Agriculturist; Land and Water; Live Stock Journal; Australasian; Melbourne Leader; Illustrated Australian News; Australasian Sketcher; Marlborough Times; Broad Arrow.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

NOVEMBER, 1877.

THERAPEUTICAL NOTES ON CHLORODYNE.

BY JOHN DOWLING ALLMAN, CREECHURCH LANE, LONDON.

I THINK I may claim the right of having properly introduced Chlorodyne to the notice of the veterinary profession. In a series of therapeutical notes on "New Remedies," circulated amongst the profession some time since, and published by Messrs. C. J. Hewlett & Son, Veterinary Druggists, Creechurch Lane, London, I particularly drew attention to this powerful remedy, and have also requested many of my friends to note their experience in the use of this compound. To the following gentlemen I am greatly indebted for clinical notes regarding the therapeutic action of this now popular remedy, which constitutes nearly the whole or major part of their treatment in many acute and sub-acute diseases. Mr. S. Locke, M.R.C.V.S., Manchester, who has had every opportunity of giving it a trial in the large practice of my friend Mr. Tom Taylor, speaks highly of the efficacy of chlorodyne; and Mr. Faulkner, M.R.C.V.S., Manchester, Mr. J. Fraser, M.R.C.V.S., Newbury, Mr. A. H. Sautry, M.R.C.V.S., Norwich, Mr. Shipley, M.R.C.V.S., Yarmouth, Mr. H. W. Thomas, M.R.C.V.S., Plymouth; Mr. Walker, M.R.C.V.S., Bradford, Messrs. Carless & Son, M.R.C.V.S.,

Stafford, Mr. H. Olver, M.R.C.V.S., Tamworth, Mr. J. W. Hill, M.R.C.V.S., Wolverhampton,*—all these eminent practitioners have employed chlorodyne very largely in their practice, and will fully corroborate my remarks regarding the action of this important medicine.

Therapeutics.—The chief indications for the administration of chlorodyne are considered below, *seriatim*:—

1. To relieve pain. As an analgesic, chlorodyne is certainly without a rival. It can be prescribed with marked effect to allay pain arising from any cause whatever, except acute inflammation of the brain; and it is preferred to the anæsthetics, whenever the pain has any tendency to permanency. In painful spasm, such as Colic or Gripes, it is invaluable, as it seems immediately to quiet the patient, acting alike on the motor and sensory derangement.

2. To produce sleep. Sleeplessness occurring in acute disease, and not dependent upon cerebral inflammation, may very frequently be relieved by the exhibition of chlorodyne. In many forms of Low Fever, adynamic delirium often co-exists with sleeplessness, and is then best met by chlorodyne.

3. In Peritonitis. After due depletion, or in cases not requiring depletion, it should always be exhibited in large doses—℥j (one ounce)—at regular intervals, and in such a way as to keep the patient in a decided state of narcotism.

4. To check excessive secretion. For this purpose chlorodyne is very largely employed in Diarrhœa; and it is very efficacious, either alone or in combination with various remedies the practitioner may deem of service. In Enteritis and in Dysentery, although no less frequently used than in Diarrhœa, it is of service rather as an antiphlogistic and analgesic, than by checking secretion. In Diabetes Insipidus, the combination of chlorodyne and gallic acid has been found a very successful remedy.

5. To support the system. In many forms of fevers, or in the convalescence of patients after severe injuries, and in various

* *Vide* Mr. Hill's valuable paper on "Canine Distemper" (*Veterinary Journal* for October). Mr. Hill also mentions chlorodyne in his work on the "Dog," which is to be published very soon.

protracted adynamic illnesses, when to afford actual support to the system is urgently necessary, it is especially indicated. This will be most particularly noticed when, from any cause, sufficient food to maintain life cannot be taken or retained.

6. As a sudorific. In many severe colds, where there is much shivering or chilliness, and in many forms of muscular rheumatism, it can be administered with very great benefit. With its employment, there should follow the usual measures: such as warm drinks, warm coverings, and soaking the legs with warm water.

7. In chronic cough of horses affecting the trachea, when given in combination with oxymel Scillæ, it has proved an invaluable remedy.

Pharmaceutical process.—There are numerous makers of this compound. A few years since I made a series of experiments in the compounding of chlorodyne, and have decided on a formula which has given immense satisfaction. It is to be obtained only of Messrs. C. J. Hewlett & Son, already mentioned. It contains the following powerful ingredients; and being carefully prepared, it makes an excellent mixture, which does not separate. I might mention that, unless attention be paid in the compounding of it, the æther and chloroform float to the top, and the chlorodyne is then of no use.

INGREDIENTS.

Pure Chloroform	Ol. Menth. Pip. Aug.
Æther, Pure	Capsicum.
Morph. Mur.	Muc. Acaciæ.
Ext. Cannab. Ind.	Theriaca.

It will be observed that nearly all these ingredients are powerful remedies, and mixed together in the necessary proportions, form a compound which may be summarized thus:

Anti-spasmodic, Sedative, Astringent, Diaphoretic.

PUNCTURE OF THE INTESTINE IN FLATULENT COLIC.

BY T. H. MERRICK, M.R.C.V.S., NORTHAMPTON.

HAVING read, with much interest, both Mr. Harthill's and Mr. Berne's papers on puncturing the intestine in Flatulent

Colic, I determined on so operating when next a case came under my treatment necessitating it. Such a case having presented itself, I have much pleasure in describing it, and giving the results; and at the same time I desire to acknowledge my obligation to the above-named gentlemen for their papers on the operation.

On the 10th July, about noon, I was summoned to attend a cart-mare belonging to Mrs. Underwood, of Lywell, a village about six miles from Northampton. The messenger informed me that she was in great pain, and was very much "blown." On arrival, I found the mare to be suffering from an acute attack of Tympanitis—the abdomen being greatly distended with gas. The history of the case is as follows: The mare was first observed to be unwell in the morning about four o'clock, when the horse-keeper went to fetch her from the field; she was then in so much pain that it was with difficulty he got her home. Two Colic draughts were administered at intervals, after which she seemed easier; but the painful symptoms again recurring, a messenger was sent requesting my attendance. On my arrival the mare's pulse was very weak and indistinct, and numbered eighty per minute; the mucous membranes were much injected; the surface of the body and extremities cold; quickened respiration, and great uneasiness. I administered an antispasmodic draught, with Spts. Terebinth and Spts. Ammon. Arom. I also injected subcutaneously ʒi Sol. Meconate of Morphia, and applied mustard and turpentine to the abdomen, but failed in giving her any relief: indeed, she got rapidly worse, and became so distressed and helpless, that I was afraid she would fall. I therefore determined on puncturing the intestine. The right side of the abdomen being most distended, I decided to operate there, as advised by Mr. Harthill, making the puncture about equidistant from the transverse process of the lumbar vertebræ, the ileum, and last rib. On withdrawing the trocar the accumulated gas rapidly escaped, and the abdomen quickly became reduced in size; the relief afforded in a few minutes was most satisfactory, and the sigh of relief remarked by Mr. Berne in his case was especially noticed in this patient. All symptoms of pain immediately ceased, and though dull, she seemed comfortable, and in the

course of two hours the pulse became distinct, and she commenced eating a bran mash that was before her. I am informed that after I left she again showed symptoms of pain, but was soon relieved by an anodyne draught, which was left in case of a relapse.

On visiting my patient the next morning, I found her with a good pulse at forty-eight, mucous membranes very slightly injected, skin and extremities warm, the bowels acting, and the appetite good,—the patient, in fact, was convalescent, so that I had no occasion to pay her another visit.

PARASITIC DISEASE OF THE KIDNEYS OF A FILLY.

BY W. HEPBURN, M.R.C.V.S., COLDSTREAM, BERWICK.

ALTHOUGH it is tolerably certain that Parasitism in the horse, terminating fatally, is not at all so common in this country as it is amongst some others of our domestic animals, it is yet highly probable that, were we better acquainted with this class of disorders, we might assign to them a different position in the enumeration of those causes which produce serious results in this animal.

The greater number of reported fatal cases of Equine Parasitism are those associated with the existence of some of the rarer forms of nematode worms in the tissues of the intestinal canal, or are connected with the structural changes and functional disturbances consequent on the migration of some of the strongyli.

If we are not able as yet to understand the entire life-history of the nematode worms, or to account in a satisfactory manner for their presence in different situations when they occur, we can at least note the disturbance of function and changes of structure which their presence seems to entail in the different situations where they are met with. And believing that such narration of phenomena or signs of ill-health is at all times instructive to some, as well as being, in so far as it is a correct statement of well observed facts, a step in the proper direction towards under-

standing the history of those organisms, I am induced briefly to record the following case.

The patient was a two-year-old draught filly, which I was requested to examine and prescribe for in the beginning of July last.

The information received regarding the animal was, that from the period of being turned out to grass in the early part of May, she seemed to be doing badly, and was now considered to be getting worse.

Her general appearance was anything but promising: the coat was dry and staring, with a scurfy state of the skin; there was marasmus; the abdomen was tucked up; the pulse and respirations were natural, but the appetite was much impaired; and she was lame in her off hind-leg. There was no pain, or even uneasiness, although her look was expressive of exhaustion.

From examination of the limb, no sufficient cause could be found for the lameness, which I attributed to the general condition of ill-health, and which again appeared attributable to some ill-defined or occult organic disease.

Having removed the filly from the open field, and placed her in a comfortable box, she was supplied with cut grass and oats, etc. The medical treatment proper consisted in the exhibition, twice daily, of Acid Sulph. and Ferri Sulph. in good ale and gruel. This treatment was persevered in for eight or ten days, when she appeared considerably improved in every respect, with the exception of the lameness, which remained as before. At this time she was allowed to go in a grass field during the day, but was placed under cover at night.

Her condition and symptoms continued from this time until the third week without variation, when she suddenly became worse—the lameness in particular being markedly aggravated—and in a few days from this obvious increase in the general illness she died.

The *post-mortem* examination, made twenty-four hours after death, showed no alteration of structure, nor evidence of diseased action, save in the region of the kidneys. Over both these organs, and beneath their peritoneal covering, there was a considerable layer of badly organized, pale-coloured lymph. This adventitious

product in the case of the right kidney formed a very distinct and broad band of adhesion to the right lobe of the liver. Under this material were found between thirty and forty small round worms, which I believe to be specimens of the *Strongylus armatus*. Both kidneys were much increased in volume, paler in colour, and more friable in texture than natural.

TUBERCULOSIS.

BY PROFESSOR T. W. MAYER, F.R.C.V.S., ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

I HAVE read with much interest the papers that have appeared lately in the *Veterinary Journal* relative to Tuberculosis; and having had very recently a case in which this disease had attacked the synovial membranes, I have thought it may interest the profession if I record the history of it, the treatment adopted, and the result.

On the 26th of August, 1876, a well-bred pedigree cow was admitted into the hospital of the Agricultural College, Cirencester. She was brought in a cart, being so lame on the left and right knee, as well as the right stifle, that she could scarcely walk, much less stand. On inquiry, it was found that from the time of her birth, April 16th, 1870, until the 31st of December, 1875, she had enjoyed good health. She had then an abortion, but was put to the bull again on the 1st April, 1876. Very shortly afterwards she was attacked with lameness of the left stifle, which removed to the right knee, afterwards to the left knee, and from thence to the right stifle. She had been treated, both externally and internally, without obtaining any relief. On subsequent inquiry, it was ascertained that the animal herself and her mother were the progeny of the same bull.

On admission into the hospital the cow exhibited great anxiety of countenance, pulse small and rapid, very unhealthy appearance of skin, temperature moderate, excessive pain on pressure

along the back, the knees, and especially the right stifle, which was considerably enlarged; lameness was great, and the muscles of the right hind-quarter wasted; abdomen tucked up; urine scanty and high-coloured; appetite indifferent; rumination irregular; bowels constipated. On auscultation, a portion of the left lung was found in a diseased condition; the respiratory murmur indistinct; breathing variable.

The animal was placed in a roomy, well-ventilated box, with plenty of water to drink, in which was placed ℥ss of the iodide potassa, the diet consisting of a moderate quantity of good hay.

August 27. Feeds and ruminates well; lies a great deal, and evinces great pain on pressing the right stifle; considerable irritative fever; pulse 70, breathing accelerated; fæces regular, but slimy in appearance. A liniment composed of two parts of compound soap liniment and one part of tinct. opii was rubbed along the spine and into the stifle, and the medicine repeated. Some of the urine was collected for the purpose of being tested.

The following day the cow was placed in a hot air bath at 124° F., and kept in for twenty minutes, when, becoming uneasy, she was removed, well douched with tepid water, dried, and clothed.

I am indebted to A. H. Church, Esq., M.D., Professor of Chemistry at the A. C. C., for the examination of the cow's urine on this and subsequent occasions, as well as for the interest he kindly took in the operation of the medicines it was decided to adopt, not only for the relief of the animal, but for the prevention of abortion, and the proper supply of nutritious blood to the fœtus. He remarks, under date 29th August, 1876, "The total solid residue from 100 parts by measure of the urine was no less than 9·52 parts. Much sugar present."

A few days later "the solids were reduced to 7·71 per cent., and there was less sugar."

In consequence of the results obtained by this examination, the cow was treated by the administration of citrate of potass, ℥ss doses in aqueous solution, alternated with the bicarbonate of potass in similar doses, combined with ℥vij of ol. lini. twice a day, and a liniment composed—Fleming's tincture of aconite ℥j,

lin. saponis comp. ℥ij, was rubbed into the spine and joints daily.

On the 31st the animal was more tranquil; pulse 60; the swelling and pain of the joints diminished; urine more abundant. Treatment continued.

In the early part of September I considered it advisable to administer sulphate of quinine alternately with bicarbonate of potash; accordingly grs. x., gradually increased to grs. xx., was given once a day in aqueous solution. On the 14th, Professor Church reported, "That the sp. gr. of the urine was 1049. Total residue smaller than before; alkaline reaction, not more than usual phosphates and carbonates, but much sugar." And on the 22nd, when it was again tested, "Similar to last, but sp. gr. 1047, and less solids."

About this period considerable rigidity of the muscles of the diseased hind-quarter was manifested, which led to the employment of strychnine in doses of $\frac{1}{6}$th of a grain, increased to 1 gr., once a day. The quinine and potass was also continued. Subsequently the tartrate of potass was substituted for the carbonate of potass, and the quinine and strychnine regularly continued for a month. During this period the general health of the cow improved, the lameness became completely centred into the right stifle, and the enlargement of the other joints became reduced. Although the lameness was still very great, hopes began to be entertained that abortion might be prevented, and that with care gestation might be completed.

On the 3rd of October the urine was again tested, Professor Church reporting "that the sp. gr. was 1040; acid reaction, with deposit of uric acid."

The appearance of the animal was at this period more natural; pulse 60, and strong; breathing tranquil, except when moved; temperature of body equal; appetite good; urine more copious; bowels regular, but inclined to be costive. She has had several warm baths, which appear to have had a salutary effect on her health and skin. The administration of quinine with tartrate of potass was continued, but without strychnine, until the middle of October, when tincture of arnica was substituted for all other medicines, given in 2-dram doses in water twice a day. The

urine was regularly tested, Professor Church reporting the following changes:—"16th Oct. Trace of albumen; faintly acid reaction; deposited ammonio-magnesian phosphates on standing. 24th Oct. Alkaline, slight deposit of mucus, with much ammonio-magnesian phosphates. 27th Oct. Very faintly acid; trace of mucus; no precipitates of salts; nearly normal."

In the early part of November it was apparent that, as far as the animal's general health was concerned, the symptoms were more favourable; her breathing and pulse were regular, feeding and ruminating well; the pain in the limb less. The dose of the tincture of arnica was increased to ℥ij, repeated in ℥ss of water twice a day: this treatment was continued during the greater part of the month.

Professor Church now reported on the state of the urine as follows:—"8th Nov. Clear; faintly acid; slight deposit on standing of ammonio-magnesian phosphates, with trace of mucus. 23rd. Hardly different from last sample."

It was now apparent that gestation was progressing favourably, and the treatment was therefore confined to feeding the animal with oil cake mixed with crushed corn, turnips, and giving tonics, so as to support the system. The tincture of arnica was discontinued, and quinine, gentian, ginger, and infusion of quassia substituted, with occasional small doses of linseed oil. This was continued until January 8th, 1877, when the cow produced a heifer calf, apparently in a healthy condition, but which was only allowed to be suckled for a few days. For about a month after the removal of the calf, but little alteration was apparent in the cow's health; but the swelling and pain in the stifle joint became much increased, and a general wasting of the body commenced, particularly in the diseased limb. At the commencement of March the effect of hypodermic injection was tried: one dram of iodide of potass, dissolved in half an ounce of water, was injected under the skin and over the stifle joint, and was repeated at intervals. This application certainly produced relief, but as the cow was useless for breeding purposes, and suffering from pain and disease which would have eventually produced death, she was destroyed.

Post-mortem.—On removing the skin, the body was found to

be generally emaciated; the pharynx and larynx in a tolerably healthy state. The absorbent glands of the neck and external parts were enlarged, and contained tuberculous deposits. On opening the chest, the lungs were found adhering to the pleura; two of the central ribs on the left side had been fractured, but were completely united again. Both lungs contained tubercles—the right a very large one, containing a cheesy-looking substance, mixed with a dark chocolate-looking fluid; several smaller tubercles were disseminated over its surface. The heart did not show any peculiar alteration of structure. The liver contained several tubercles, filled with similar products to those in the lungs. The hepatic duct was enlarged, its coat thickened and knotted; adhering to its sides was a large quantity of black greyish looking granules; it was also softened in its structure, and rapidly became decomposed. The mesenteric glands generally exhibited great disorganization; the stomach and intestines otherwise in a tolerably healthy condition. On opening the right stifle joint (the seat of lameness), there was a large escape of serum and lymph; the synovial surfaces of the femur, patella, and tibia extensively ulcerated; there was also, in the interior of the joint, adhering to the roughened synovial surfaces, a collection of fibrin, partially organized, and an enlargement of the absorbents in its vicinity. In the centre of the flexor perforans and perforatus muscle, and communicating with the joint above, was a large semi-cartilaginous sac, containing a large proportion of fibrin, coagulated lymph, and pus. On examination of the other joints, which had been previously affected in the early stages of the disease, the synovial surfaces were found in a state of disorganization. The fibrinous deposit, a portion of the hepatic duct, and portions of the femur, tibia, and patella, are deposited in the College museum.

TUBERCULOSIS IN A BULL.

BY J. M. PARKER, M.R.C.V.S., BIRMINGHAM.

I HAVE forwarded to the Brown Institution, for inspection, a deposit removed from the mediastinum of a bull of about two

years of age. He had been ill for some months, and was first seen by me in June, when he presented no very urgent symptoms, but evinced pain on pressure of the abdominal parietes, and was constantly grinding his teeth. His appetite was fair; no tympanitis; pulse and temperature normal. No lung mischief could be discovered by the usual tests. He gradually sank, but my visits not being required after the middle of July, I cannot give a detailed history of the case. I heard from time to time that he became almost imperceptibly emaciated. There was no cough or increased respiration.

The owner at length decided upon having him destroyed, and requested me to make a *post-mortem* examination. All the organs were healthy except the lungs, which were studded with tumours of a similar character to that now sent. One was larger than the specimen, three others slightly smaller, and several more existed from this size to that of a greengage plum. Each was enveloped in a complete sac. There was no congestion of the lungs, and the air tubes were pervious. I have once seen a similar deposit in a cow's udder, but never in the lungs.

[Professor Duguid reports: "The case referred to by Mr. Parker is a very characteristic one of Tuberculosis. The specimen consisted of three separate masses of tubercle, each covered by a strong layer of condensed connective tissue, which was only slightly adherent to the deposit. They were loosely joined by areolar tissue, through which some tolerable-sized bloodvessels passed. The fresh-cut surface showed the peculiar greyish-yellow appearance of tubercle; and, in addition, many small isolated spots could be seen in the first stage of calcification. On close examination of the limiting membrane, traces of lymphatic tissue could be seen. From this I had no doubt that the deposit had taken place in the lymphatic glands, and that the capsules of the glands had become enlarged and thickened as the deposit increased."]

MALIGNANT DISEASE OF THE FEET OF CATTLE, CONSEQUENT ON FOOT-AND-MOUTH DISEASE.

BY GOFORTH WYER, M.R.C.V.S., DONINGTON, SPALDING.

I HAVE forwarded a specimen of disease of the pedal bone in horned cattle, which I think will be found interesting from a pathological point of view, and particularly so considering the number of animals thus affected on one farm at the same time, and following an attack of Contagious Eczema, from which they remained lame.

The parcel contains a fore-leg, and you will observe one side of the foot has been amputated at the inferior part of the long pastern. The pedal bone ticketed is the one I removed from the same limb about a year ago ; but lately the other side gave evidence of disease by lameness and pain, and an inconvenient growth of the horny covering, as you will perceive. At the time I amputated, there appeared to be only one side of each affected. The animal, after the operation, walked very well on half a foot of each leg. I had her slaughtered to-day for the market, as I found her doing but little good. I shall be pleased to learn your opinion as to the nature of the disease. To me it resembles Scrofula of bone in the human subject.

The history of the cases is as follows :—In the autumn of 1875 Mr. Nicholson, of Gosberton Bank, had Contagious Eczema (Foot-and-mouth Disease) amongst his cattle, and, as he says, fearfully bad; although they regained their appetite and strength, they never recovered from lameness. In January, 1876, my advice was sought. I found a lot of cattle—ten in number—about a year old, and all lame: some in very low condition (those that suffered most); the others were in fair order. Some were lame in both fore-feet, one side each foot ; others had only one foot and one side involved, and some both feet and both sides. The remaining cattle—viz., milch cows and heifers, about three years old—recovered from the Eczema, and went on well. On examination, I found the diseased feet very much out of their natural form ; so I endeavoured, with the assistance of a farrier, to shape them properly. On cutting down upon the sole, a small quantity of dark-coloured and very offensive matter escaped,

satisfying me there was disease of bone. The feet were dressed with a solution of chloride of zinc from time to time, and other dressings of a similar nature; but all was of no avail, and in the autumn of the same year six of them (the least lame) had the feet again pared, and were sold at a fair. Two others died during the summer from inanition—not being able to stand on their feet. There then remained only two, and I determined to amputate the diseased side of each foot of one of these. The animal, after the operation, appeared greatly relieved, and did very well, walking satisfactorily for a time; but lameness again showed itself in one foot, by pain, and the hoof grew awkwardly, although the foot was regularly pared and shortened. The other animal I found suffering in both fore-feet and both sides, and I had it destroyed, as amputation could be of no use if both sides had to be removed. In some cases the hind-feet were also diseased, but it did not seem to pain the cattle so much as the fore-feet.

These cases being unusual in my practice, I made inquiries of the owner, and he said the bull (the sire of this lot of "berlings") was lame in his feet, and was so for some two years: having repeatedly to shorten the feet, believing the lameness to be caused by his always being tied up; but he never got sound, and was disposed of.

Some few years back I had a similar case, the animal being the property of Mr. W. Edwards, of Bridge End, a small cottager. He had one cow that had been lame for several weeks; one side of the foot was enlarged, and she was suffering great pain. The foot was poulticed, and afterwards blistered round the coronet; the sole was pared and the hoof shortened, and on cutting through the sole a small quantity of dark-coloured offensive matter was found—thus proving the existence of bone disease. The foot was again poulticed and dressed, but to no good. A few months after I bought her at £7, and amputated that side of the foot at the long pastern. The operation afforded immediate relief; and the following summer I fed her, and she did very well. The appearance of the hoof and pedal bone corresponded exactly with those in the above cases.

This cow had previously suffered from Eczema. In none of

the cases was there any suppurative action between the hoofs or round the coronet, neither was the coronet in any way enlarged.

[The cases recorded by Mr. Wyer are illustrative of one of the serious complications of Foot-and-mouth Disease—a malady which some authorities have pretended to regard with indifference, but which is one of the gravest scourges an agricultural country can suffer from. We have alluded to this complication in "Veterinary Sanitary Science and Police" (vol. i., pp. 451, 456). Young animals appear to be much more liable to this form of Panaris or Onchyia, as a complication of Foot-and-mouth Disease, than adults, and its effects are more disastrous in them. The limb sent was *minus* a claw, amputation of the other claw having apparently been most successfully performed. The claw remaining had become deviated, in a remarkable manner, towards the middle line of the metacarpus, as if to compensate for the loss of the other phalanx, and the hoof had also lost its concavo-convex form, and become almost convex on both sides. The pedal bone of the amputated phalanx was carious at its lower margin, but there was nothing to indicate the existence of scrofula. The horn matrix of the claw attached to the limb was swollen and altered in its texture, the alteration being not unlike that of Chronic Laminitis in the horse. The bones of the limb and the other phalanges were unaltered.]

REMARKS ON THE TREATMENT OF OPEN HOCK-JOINT, ILLUSTRATED BY A CASE.

BY JAMES LAMBERT, F.R.C.V.S., 17TH LANCERS, LEEDS.

A FINE bay mare, four years old, supernumerary remount of the 17th Lancers, was kicked in Leeds barracks at the end of August last. The injury caused was a contused wound on the inside of the off hock-joint, about half an inch in diameter, and apparently superficial. There was much swelling of the joint. The treatment enjoined was mash diet, with absolute rest, as experience has taught me that it is often very dangerous to foment or apply water in any form to wounds of the hock, for fear of causing the

joint to open. On the 2nd September she received Aloes ʒv, which acted well.

In this case, however, sloughing of the part took place on the 4th September, when there was a free discharge of synovia from the wound. Attempts were made to stop it by dusting powdered alum, mixed with flour, over the orifice; and afterwards by a pad of fine tow with powdered alum and flour, and a tail bandage over all. These attempts failed, and the mare would not endure a bandage.

On the 7th September, as the discharge still continued, a strong cantharidine blister was applied all round the joint, as recommended by Professor Williams in "The Principles and Practice of Veterinary Surgery." The blister acted well, but apparently did no good.

On the 9th there was much synovial discharge; the swelling was enormous; the mare was in great pain, and was evidently very tired of standing up so long. Unfortunately, there appeared no means of suspending slings; but seeing that the case had now become desperate, they were at last successfully extemporized by means of irons placed through holes in the upper parts of the stall posts, and the patient immediately rested in them.

The same morning I went to Messrs. Harvey, Reynolds, & Co., chemists, Leeds, and got a solution of shellac of the following strength, which they happened to have made. They have very kindly given me the recipe:—

Best Shellac	2 lbs.
Methylated Spirit . . .	2 pints.

Dissolve in a bottle kept inverted every other day. This usually takes about fourteen days to entirely dissolve.

I think the strength important. I obtained the suggestion to use a shellac solution from the work of Professor Williams above-named.

The "blob" of synovia was removed, the wound wiped dry, a piece of hanging fungus snipped off, and then a very thin (it may be described as almost transparent) pad of fine tow, about an inch and a half in diameter, was applied dry over the orifice, and painted over with the shellac solution, with a camel-hair brush, three times during the afternoon. It adhered, and stopped the

discharge for a short time; but the mare, as before, was very restless, and often moved the hock, showing great pain.

Next morning the discharge of synovia was still going on abundantly—oozing and dropping from under the pad of shellac and tow. The pad was removed; and in coming away, pulled off the blistered hair and epidermis for a small space, about half an inch all round the wound, leaving a bare patch. Another pad of fine tow, made a little thicker, was taken; but this time, instead of being put on dry, it was first wetted with the shellac solution, and applied, after well drying the skin, etc., directly over the wound; and the tow was then painted over once with the solution, including also a little of the skin outside its edges. It adhered, and the discharge immediately ceased. No more shellac was afterwards used, as none was required.

In a few hours the application had formed into a hard cake, firmly fixed round the edges, and completely closing the wound. In about an hour afterwards the pain of the joint appeared much less, and from that time the mare became easy, losing the haggard countenance and drawn-up appearance of flank that she had before presented. She also began to feed well.

The cake was left untouched for nine days; the hock all this time being very much swollen. On the tenth day the cake had detached itself a little; so it was removed, and the wound was found to be completely closed.

Fomentations were from that time used to the joint. The patient was taken out of the slings on the 25th September, and two days afterwards placed in a well-bedded-down loose box. Fomentations were then discontinued, and cold water played from a pipe on the joint for half an hour daily.

Now, October 13th, the swelling has so decreased as to be but little perceptible, and it is daily becoming less; the mare can use the joint well; she is fast regaining condition, and I have little doubt that she will soon be fit to resume work.

I have gone into particulars, because veterinary surgeons find cases of open joint, and especially those of the hock, difficult to treat, and not unfrequently fatal. Attention is requested to the strength and method of applying the shellac solution. Of course, it can be made in much smaller quantity than is given in the

recipe. I think it of great importance to apply the pad to a bare or shaven place.

During my military service, I have had numerous cases of open hock-joint; this I mention, because that articulation is of all the most difficult to treat. They have always been troublesome. Some were fatal, and some were cured by applying a pad of tow with powdered alum and flour, and bandage over all. In many cases, however, the patient would not allow a bandage to remain on.

I have tried the cold water treatment in some cases, by allowing a continual and gentle flow over the joint, but unsuccessfully. I have tried blistering in some cases also, but unsuccessfully. In one case, which appeared desperate, some years ago, at the Curragh camp, at the suggestion of Mr. Hall, V.S., Royal Dragoons, I inserted a pin suture; and the case, after very much trouble and some strong blisters after the wound had closed, eventually did well, and the horse is now at work in the regiment. Mr. Hall is a great advocate for the employment of wire suture in these cases. I must confess that experience has shown me that a suture of any kind is not always practicable or successful.

In the army, cases of open joint are usually produced after severe sloughing of the parts, caused by kicks from other horses, as we have no stall divisions except bales in the troop stables. In these cases of joint kicks, with a wound, I think it of great importance not to remove the natural scab by fomentations, etc., for fear that, it falling off or dissolving, the joint should then open. After a kick, with a wound, however small, on the hock, it is advisable to give absolute rest. I have seen several cases where I attributed the after-opening of the joint to water-bathings having been employed. If the wound is not over a part where the joint can open, fomentations or cold bathings will be beneficial and safe. Of course, in some cases, no matter what is done, the joint will open, owing to the disintegration of the skin and subjacent tissues by the kick at the point of contact.

Aware that the treatment by shellac solution, which I have above detailed, has only been tried by me in one case, I beg to recommend it to the notice of the profession. It appears to be also well adapted to cases of open stifle and other articulations.

In conclusion, I would lay great stress on the early employment of slings in important cases of open joint. In many cases where it appears impossible to hang them, a little thought and ingenuity will find out a way.

CASES OF CARDIAC DISEASE.

BY PROFESSOR WALLEY, PRINCIPAL OF THE EDINBURGH VETERINARY COLLEGE.

RUPTURE OF THE AORTA, WITH LACERATION OF ITS VALVES.

SUBJECT: a lorry horse, upwards of eighteen years old. Previous health, very good.

On Thursday, 23rd August, the attendant observed that the horse had not quite finished his morning meal, which was given to him at 5.30; and two or three hours subsequently he refused to eat his hay. He took a load of about 26 cwt. for a distance of a mile; and while the porters were removing the load (about 10 a.m.) he was heard to give vent to a peculiar cry, similar to the yell of an injured dog, and immediately afterwards fell dead in the shafts.

Autopsy, twenty-four hours after death.

Suspecting disease of the heart, I had the ribs removed, the knacker cutting through them with an axe, when a large quantity of sero-sanguineous fluid issued from the thorax, which, as was afterwards discovered, contained much more serum, with masses of coagulated blood; the serous investment of the posterior vena cava also contained a large quantity of extravasated blood.

The pericardium was distended to its utmost by blood clots and serum. The heart was carefully removed; and on examination it was found that a rupture existed at the base of the aorta, immediately at its juncture with the ventricle—the tissues around the seat of rupture being largely infiltrated with blood. On exposing the interior of the vessel, the rupture was seen to extend for $1\frac{3}{4}$ inch in a transverse direction, through the whole of the coats of the artery, and through the junction of the two outer

segments of the semilunar valves; the laceration in this part, however, being only about an inch in extent.

The whole of the cardiac walls were dilated and soft, and by the microscope extensive fatty infiltration, with less marked degeneration, was detected (two or three fibrous nodules existed in one of the segments of the valve), and a well-developed *os cordis* (of which I have seen several in the horse) was discovered on dissection.

The immediate cause of rupture was not apparent, as the animal had not been heavily laden, neither had he been hurried, nor, so far as I could glean, frightened; in fact, he was standing perfectly still when he fell.

The predisposing cause of rupture was, of course, apparent.

Extensive Aortic, Semilunar, and Mitral Valvular Disease.—Dilatation of Right, Simple Hypertrophy of Left, Ventricle—Chronic Congestion and Purulent Infiltration of Lungs.—Roaring.

Subject: black cart mare, sixteen years old, or thereabouts.

History.—Had been in the possession of the Edinburgh Corporation about six years, during which time she had done an immense amount of hard straining work. For several years it was observed that she did not put on flesh; she was a bad "roarer," and had an intermittent pulse; a few days before death she was unable to rise. She suffered from palpitation of the heart and shortness of breath when hurried or excited. It had been my intention to make a careful *post-mortem* examination, but I was defeated in my object, from unavoidable circumstances. I only had the lungs, trachea, head and heart put into my possession, with a portion of the diaphragm.

Heart very large; left ventricle simply hypertrophied; right dilated, and muscular structures pale. Valves of right heart healthy. Mitral valve five or six times its natural thickness, indurated, and yellow in colour, with endocardial ecchymosis, especially in the inner cusp.

Aortic valve.—All the segments in the same condition as the mitral; there were small bony nodules under the endocardium in

the sinus Valsalvæ of one, with a half circle of osseous structure at the base of the aorta. Aorta much dilated. Lungs solidified, reddish-brown in colour, slightly glistening on section; resembled in appearance hypertrophied spleen structure, and exuded a large quantity of sero-sanguineous purulent matter when incised and pressed. Bronchial mucous membrane thickened and inflamed, bathed in pus; no discharge of any consequence had been observed from the nose prior to death. Pulmonary arterial branches healthy. Diaphragm (portion) showed a circular tumour, about six inches in diameter and two inches in thickness, section of which revealed a cyst-wall composed of the phrenic structures, enclosing a mass of soft, pulpy, dirty-brown, stratified matter, evidently blood extravasate, in which softening had commenced. The cause of this extravasate may have been rupture of a small phrenic vessel, as the result of violence by a fall.

The valvular conditions fully explain the intermittent pulse, the dyspnœa and palpitation on exertion, the state of the cardiac walls, and the pulmonary and bronchial disease. The disease being confined to the left heart explains the absence of dropsy, and the necessary implication of the pneumogastric nerve is explanatory of the roaring; while the absence of Corrigan's pulse can be understood, when the fact that the aortic valves, though very much altered, were still competent, is taken into consideration.

Disease of the Walls of the Heart, associated with Disease of the Laryngo-Pharyngeal Group of Lymphatic Glands.—Sudden Death.

Subject: a valuable brown cob, seven years old.

History.—The animal had been known to me some time prior to Sept. 25th, 1876, and I had attended him once or twice for trifling ailments; on the date mentioned my attention was called to an enlargement of his throat, which had been in existence and had been gradually increasing in size for about ten days. The enlargement, on manipulation, proved to be localised in the lymphatic glands of the throat, and was very hard, but not very

sensitive or hot. It caused the left parotid to bulge laterally, and interfered somewhat with deglutition, and also to some extent, on exertion, with respiration; no febrile symptoms were present. Iodine was applied externally, and also freely administered until November 7th, on which date I deeply and repeatedly punctured the glands with a small trocar; passed two setons over them, and applied a strong blister; the blister was repeated on the 1st December, the administration of iodine being suspended at the time of the operation.

In the course of about three weeks, the swelling had so far subsided as to enable the animal to perform regular work without any difficulty, and prior to his death it could only be detected by manipulation—very hard and insensible.

On the afternoon of the 20th of last month, my immediate attendance was requested, and my assistant (Mr. Young), in my absence, hurried to the stables; but before he arrived the cob was dead. On inquiry, I found that he had been working up to 10 a.m., had eaten his food through the day, was observed unwell about 4 p.m., and in about half an hour afterwards he leaned against the stall and fell dead—the only accompanying phenomena of death being muscular quivers and gasping.

During the early part of the year, I attended the cob for a mild attack of "Effusive Fever," but on no occasion did I notice any symptom indicative of cardiac derangement. I may observe, however, that about three weeks prior to his death he suddenly fell on his side, while being driven; but the fall was attributed to the slippery condition of a wooden bridge over which he was passing at the time. Probably (judging by the light of subsequently revealed facts) the fall may have been due to Cardiac Vertigo.

The *post-mortem* revealed effusion into the pericardial sac; the presence of a patch of disease on the internal surface of the left ventricle, in close proximity to the left ventricular furrow, and about the size of a half-crown piece; a number of small nodular enlargements on the exterior of the right auricle; a considerable amount of thickening at the base of the mitral and tricuspid valves respectively, with nodular elevations of the endocardium and schirrhus of the adjacent cardiac structure. The glands before

mentioned were much enlarged (the whole of the group being intimately united by new tissue and weighing about twelve ounces) and very hard, but no disease of any kind was detected elsewhere, and the carcase was laden with fat.

The character of the disease I have not yet determined; and I am afraid there will be some difficulty in doing so now, as the specimens were neglected and allowed to undergo partial decomposition before any steps were taken for their preservation. But, from a hurried microscopical examination, the general characters of the diseased parts, and the clinical history of the case, I am inclined to look upon the disease as of a sarcomatous nature.

The features of importance are: the association of the cardiac with glandular disease, the absence of distinctive cardiac symptoms, and the sudden death. The case, too, is another warning to the young practitioner to carefully examine the condition of the pulse when examining a horse as to soundness, and also to seek for cardiac derangement in animals which stumble when at work without any apparent cause; and (parenthetically) I may remark upon the great value of puncturation in the treatment of indurated tumours. I have repeatedly employed this method of treatment, with and without setons; and only a few weeks since, in treating a tumour as large as my head in the neck of a horse (posterior cervical region), I punctured it deeply and repeatedly with my exploring needle, and subsequently with a Syme's bistoury. The rapidity in the subsidence of the tumour after each puncturation was simply marvellous—the horse, in fact, being able to resume work in about ten days after the last operation.

COMMINUTED FRACTURE OF LOWER THIRD OF RADIUS, AND ULCERATION OF THE FIRST PHALANGEAL ARTICULATION.

BY JOHN KIRK, VETERINARY STUDENT, EDINBURGH.

SUBJECT, a dark brown mare, "Bashful," six years old, the property of Major Gwyn.

On the third day of the Musselburgh race meeting, in October

last, as I was watching the horses taking their preliminary canter, I observed a serious irregularity in the action of the off fore-leg of the above mentioned mare. This irregularity of action was so great as to lead me to watch the subsequent performance of the animal. She was ridden by the famous jockey T. Archer, from whom I afterwards learned that at the commencement of the race the mare got well away, and appeared to do her work satisfactorily; but, quite suddenly, she stopped, made a few faltering strides, and fell, Archer slipping over her head and escaping unhurt.

Examination of the off fore-limb led to the detection of a severe comminuted fracture of the radius. The mare was immediately destroyed, and the owner very kindly gave me permission to do what I chose with her. I had her conveyed to a tanyard, removed the limb from the trunk, and forwarded it to the Royal Veterinary College for the inspection of Principal Walley, whom I assisted the following day to make a careful examination of the injured parts.

From the groom I had learnt in the interim that the mare was quite sound up to the previous spring, at which time, whilst running in the Liverpool Steeplechase, carrying a heavy weight, she fell on the off side: between this fall and her death she had shown intermittent lameness, which was attributed by the attendant to sore shin.

Owing to this history, the examination was principally directed to the detection of the cause of the original lameness, which proved to be due to ulceration of the articular surfaces of the metacarpal and suffraginous bone, the cartilage covering which was, to a large extent, removed by attrition. The ulceration was, as explained by Principal Walley, due to Ostitis, probably produced by the fall which the mare sustained in the spring, and aggravated by subsequent concussion. I have seen similar articular disease in racehorses before, and I would wish to direct attention to this condition as a probable cause of many cases of occult lameness. This mare, during the course of the meeting, had taken part in two races previous to the one in which the accident happened—one of which, "The Stewards' Cup," she won.

THE ANATOMY AND PHYSIOLOGY OF THE KERATOGENOUS MEMBRANE OF THE HORSE'S FOOT.

BY DR. MOELLER.

(*Continued from page* 282.)

AFTER the blood, which, under the combined influence of the heart's propulsive power and the above-mentioned hydrostatic *momenta*, has been driven with great force into the arterial capillaries, and there served to nourish and excite the function of the matrix tissue, it passes over into the venous networks, which have their general seat upon the posterior portions of the foot. These networks, in comparison with the supplying arteries, present a proportionally large development and extent. They lie especially under the coronary cushion and between the cartilages, and upon the elastic posterior portions of the foot. The blood collects in them in great quantities, and from them begins the difficult ascent of the blood towards the heart. The hindrances to the returning circulation are overcome, firstly, by the *vis-a-tergo*, including the pressure exerted by the arterial blood-column, but more especially by a sort of physiological pumping action which takes place in the foot. The alternate pressure and relaxation imposed upon the foot by the animal during its movements, exerts an influence to be compared to that of a force- and suction-pump. When the foot becomes charged with the weight of the body, the blood in the venous networks is forced out into the ascending venous trunks. The superficial coronary venous *rete*, as well as the deep *rete* situated under the cartilages, suffer compression thereby. The blood is consequently forced into the ascending trunks with sufficient power to overcome all *vis-a-frontis*. At the moment the pressure brought about by the weight of the body is removed, the compressed parts are released, and expand; and the venous plexuses are again filled, the suction thereby exerted contributing largely to this phenomenon. The supply to these venous plexuses must come from the veins of the foot, because the last valves are to be found upon a level with the coronary veins. We find also in the foot an arrangement for the support

of the circulation, which acts exactly as the muscles upon the limbs; indeed, it must be even more powerful, inasmuch as the obstacles to be overcome are much greater. The conditions here resemble those prevailing in the lungs. The continual extravascular pressure is also to be kept in consideration.

The action of this pumpwork can be directly demonstrated, for instance, by venesection from the vascular sole or from the digital veins; or by accidental injury to the keratogenous membrane or the veins, when the blood-stream will be observed to increase and diminish with exertion and relief of pressure by movement. Every time the injured foot comes to the ground and receives pressure, the blood will be seen to spurt out in a stream, which, when the pressure is removed, diminishes to a considerable extent.

To these physiological considerations could be added important observations as to the effect of locomotion upon the nourishment of the foot and growth of the hoof, and which are in complete harmony with facts derived from experimentation. At the same time, we must continually bear in mind the great effects thereby exerted upon all inflammatory processes in this organ. In every case of serious lameness, these factors must not only be taken into consideration with regard to the injured, but also with respect to the healthy foot. Immediately the impossibility of exerting and relieving the pressure upon a foot takes place, *the circulation in the keratogenous membrane must be disturbed.* In very painful lameness of a foot,—more especially a fore one,—must the constant relief from pressure in the injured, and continual pressure upon the healthy foot, produce circulatory disturbances in each, and which will soon manifest themselves, if the effect is persistent, by derangement in nutrition, or the occurrence of inflammatory phenomena. On the foot constantly pressed upon, the weight of the body must also be taken into consideration; as this in heavy horses, and various forms of hoof, nearly always excites inflammatory processes, from the irritation exerted thereby on the keratogenous membrane.

Finally, it remains to be noticed that the proportionally powerful blood-pressure, and especially the variations in pres-

sure upon the entire circulation of the keratogenous membrane, must exercise an important influence in producing the prolapsus of the soft parts of the foot, when the keratogenous membrane becomes deprived of its horny covering in any part of its extent. The inflammatory swelling caused thereby must be also taken into consideration.

With the functions of the keratogenous membrane we are sufficiently acquainted, from the writings of Leisering, Rawitsch, Brauell, and others. One point is, however, still a matter for controversy—viz., the functions of the fleshy wall (fleshy *laminæ et laminellæ*). The question as to whether the horny laminæ are formed from the fleshy laminæ, as Leisering, Bouley, Hunting (*Veterinarian*, 1871), assert ; or if they proceed entirely from the coronary cushion, as assumed by Rawitsch, Fuchs, and Greaves, is still undecided.

In order to discuss this question more thoroughly, we must first consider the functions of the fleshy wall in a complete manner.

From the general employment of our horses upon hard roads, and especially upon paved streets, the sole of the foot scarcely enters into our cognizance, in considering what portions of the organ receive the weight of the body : at least, much less so than when the animal travels upon a soft or sandy soil. As is known, the intimate union of the fleshy-wall and horn-wall on the one hand, and of the former with the *os pedis* on the other, are of themselves sufficient to sustain the entire weight of the body. This was first brought to notice by Girard, who treated Laminitis ("Rehe") by extirpation of the sole. For, although a weakening of this union takes place in this disease, still the union is sufficient to sustain the weight of the body.

Related to this task of weight-bearing is the arrangement of the podophyllous tissue. From the immense number of ridges and furrows upon the face of the *os pedis*, the surface opposed to the "stratum periostale" for insertion is immensely increased. This inner layer of the podophyllous tissue is, as already mentioned, to be looked upon as of like nature with the tissue of ligaments and tendons. The course of the fibres corresponds entirely to this effect ; they proceed at a right-angle to the wall surface of the *os pedis*, in the direction of the horny-capsule.

By this means is the inner point of insertion of this medium of union ("*verbindungs-glied*") exceedingly firm; indeed, so strong is it that, *cæteris paribus*, it only gives way when disunion has taken place from morbid processes. This firmness of union is distinctly manifested when we attempt to remove the horny capsule from a non-macerated foot. We may often succeed in breaking a piece from the *os pedis*, but scarcely ever in tearing the "stratum periostale" from its attachments to that bone. The podophyllous tissue being enormously rich in elastic fibres and dense striæ of connective tissue, is to be compared in resistibility to tendon tissue.

Finally, the union of the fleshy-wall with the horn-wall is most intimate. Here the arrangement arrests our attention; as by this union two conditions are complied with which appear to be diametrically opposed to each other. Here must *an exceedingly firm*, but still *a movable* union, be effected—a solid union, which is at the same time capable of a continual and progressive movement of one series of tissues upon another.

This task is solved in a simple and astonishing manner—viz., by an enormous increase in the surface of the fleshy-wall and horn-wall, which come into intimate relation with each other.

So far as my knowledge extends, an attempt to arrive at a mathematical idea of the extent of the keratogenous membrane was first made by a Dr. Evans, at the instigation of Bracy Clark ("Hippodonomia"). Evans came to the conclusion that this membrane was increased some twelvefold by the projections and recesses upon its surface. He estimated the inner surface of the hoof of a horse fifteen hands high at 212 square inches, or $1\frac{1}{2}$ square foot.

Before this investigation was known to me, I had endeavoured, with the assistance of the microscope, to arrive at approximate measurements of the fleshy wall, and have obtained the most astonishing results. The increase of the superficial surface is so enormous, from the formation of laminæ, and secondary laminæ or laminellæ, that one can scarcely have a conception thereof.

If we consider the height (above to below) of the fleshy-wall as 0·04 metre, and transverse section as 0·25 metre, the superficial

extent of the fleshy-wall would amount to 100 square centim. We will now endeavour to gain an idea of its enlarged superficies by means of the laminal increase of its surface. The average width of a secondary lamina amounts to 0·2 metre,—the length of the same to 40·0 mm. The surface of a secondary lamina would thus amount to sixteen square millimetres. Upon each primary lamina are, on an average, 100 secondary laminæ; therefore the surface of a primary lamina represents 1600 square mm. As there are reckoned to be about 500 primary laminæ upon the wall surface of the keratogenous membrane, the entire surface of this membrane must then represent a superficies equal to 800,000 square mm., or 8,000 square centim. The fleshy wall alone receives, through the laminal construction of its surface, an increase of 80 per cent., and amounts to three-quarters of a square metre, or $7\frac{1}{2}$ square feet (German).

In making this calculation, I have always employed the lowest averages; and I do not think it too extreme an estimate to say that the superficial surface of the fleshy wall is equal to a square metre, or ten square German feet.

Although this result appears at first view incomprehensible, yet by closer study we find the arrangement to be an absolute necessity; especially when we reflect upon the immense work demanded from the foot, and what an amount of resistibility is absolutely necessary to the carrying out of its functions. It has not alone the weight of the body to bear during rest, but it must also be able to resist the powerful shocks which it receives in coming in contact with the ground. To comply so perfectly with all these demands, makes this union perhaps the most wonderful in the animal economy. We must also take into consideration the fact, that this wonderful union is at no one time stable, but that the stability is continually changing—by the growth of the horn-wall proceeding, as it constantly does, from above downwards.

These considerations have also a pathological interest. It can easily be understood that, in case of inflammation occurring in these tissues, as in Laminitis, it has a great tendency to produce pressure upon the surrounding parts, and especially upon the *os pedis*.

As Siedamgrotzki was the first to notice,* the pressure exerted upon the *os pedis* by inflammatory processes in these tissues, is much less the cause of disunion than has been generally assumed; but the latter is far more dependent upon a diminution of the intimate union which is normally present between the flesh-wall and horn-wall, and at the same time the effect produced by the weight of the body upon the *os pedis*. I hope at another time to return to these most important matters, in considering the pathological conditions of these organs.

We must, however, notice that also from such a continued and uninterrupted action of the weight of the body upon this suspensory apparatus as occurs in continued and painful lameness of the opposite foot (Laminitis, Naviculartharitis), a solution of the union, combined with inflammatory processes, may happen in a previously perfectly healthy foot; so that the final effect may be the same as that produced by Laminitis,—that is, the descent of the *os pedis*, and more or less rotation upon its ideal transverse axis,—as Siedamgrotzki has shown. The pathological processes which result in consequence of Laminitis, give us a *sure proof* that the horny sole plays but a very insignificant part in supporting the weight of the body.

The task of the fleshy wall to serve as a suspensory apparatus for the *os pedis*, has been long known to English authors, and was especially emphasized by Spooner,† Blaine,‡ Bracy Clark,§ and Bourgelat.‖

From this digression we will return to the consideration of the mode of development of the inner layer of the horny wall,—the horny laminæ. I cannot here take notice of all the views which have prevailed on this subject. No one will now doubt the incorrectness of the assertion of Fuchs,¶ that the intertubular horn of the horny wall was entirely produced from the fleshy laminæ. The same may be said of Brauell's view,**

* *Bericht über d. veterinairwesenen im Königr. Sachsen.*, 1872.

† On the Foot of the Horse. ‡ On the Horse. § Hippodonomia.

‖ *Essai Théorique et Pratique sur la Ferrure.*

¶ *Mittheilung aus dem Gebiet der Thierarzneikunde*, Karlshruhe, 1847.

** *Mag. für gesammte Thierheilkunde*, Bd. 19.

that the intertubular horn of the inner strata of horn-tubes was derived from the same source. Leisering * justly remarks that these assertions are vanquished standpoints.

The only question remaining open is this: Are the horny laminæ produced from the fleshy laminæ, as Bouley,† Leisering,‡ and Hunting § assume; or is a portion of the coronary cushion, the matrix of the same, as asserted by Rawitsch‖ and Greaves?¶

Those who desire to study all the details of this question more fully, are particularly referred to the above-mentioned work of Prof. Dr. Leisering, of Dresden.

The most trustworthy course by which to arrive at a satisfactory answer to such an important question is, without doubt, that by measurements,—a course which seems to have been entirely overlooked by previous authors. I have endeavoured, by treating the subject in this manner, to arrive at a satisfactory conclusion; but before I allude to this, I will first give the results of the measurements.

The specimens were prepared in absolute alcohol, and transverse sections of the horny laminæ were taken in different sections of the wall, in such a manner that all the dimensions of the vascular as well as the horny laminæ could be at once taken. In the localities indicated, the length of the primary horny laminæ was as follows:—

1.	1 m. under the coronary cushion . . .	0·6—1·0	mm.
2.	2—3 ,, ,, ,, . . .	1·5—2·0	,,
3.	5 ,, ,, ,, . . .	2·5—3·3	,,
4.	Upon the limits of the superior third of the wall	2·7—4·0	,,
5.	,, ,, under end of the wall	4·0—4·5	,,

Sections taken in the course of the laminæ give the following: viz., those taken at the superior or coronary limits of the laminæ show the latter to begin sharply at this part, and quickly increase in height (width), so that at 5 to 7 mm. from the coronet the greater part of them have attained their maximum. The above measurements, to which no claim for complete exactness is made, when controlled in this manner, will in general be found correct.

* *Der Fuss des Pferdes.*
† *Traité du Pied du Cheval.*
‡ *Fuss des Pferdes.*
§ *Veterinarian*, 1871.
‖ *Mag. für Ges. Thierheilkunde*, Bd. 28.
¶ *Veterinarian*, 1871.

The form of the primary horny laminæ will correspond to the adjoining diagrammatical illustration.*

FIG. 8.
a. Coronary cushion.
b. Horn-wall.
c. Flesh-wall.

Those situated on the superior end are pointed, or more acute; corresponding to an angle of 30° to 35°. The fleshy laminæ must necessarily have a corresponding form on their superior end. One can easily convince himself of this by taking longitudinal sections of the same.

These outlines are due to the fact, that the fleshy laminæ are inclined in their superior extremity towards the coronet, or it may be said that the intervillous spaces of the coronet gradually merge into the furrow-like recesses (sulci) of the fleshy wall; because the limits between the fleshy wall and the surface of the coronary cushion form a slight furrow, instead of an angle. In this, the beginning or superior portion of the fleshy wall, is to be sought the chief point of generation of the primary horny laminæ, and the base of the above-mentioned groove is to be especially looked upon as the seat of the development. The fleshy laminæ scarcely contribute at all to the formation of the horny laminæ, because, very soon after their origin from the coronet, they are provided by the secondary fleshy laminæ or laminellæ, from which the formation of the SECONDARY horny laminæ proceeds. A production of primary horny laminæ from the primary fleshy laminæ can, therefore, be no longer spoken of; for their surface is almost entirely taken up by the secondary fleshy laminæ.

The further development of the primary horny laminæ results from the secondary laminæ, situated between the primary fleshy laminæ. These deposit upon the free edges of the primary

* This form varies in different hoofs: the angle is smaller in flat hoofs,—larger in very oblique ones.

horny laminæ new masses of epithelium, which, on account of their having attained a slight degree of hornification, are easily coloured by tinctures.

The conditions are very different with respect to the secondary horny laminæ. As already remarked, the primary fleshy laminæ are, soon after their origin from the coronary cushion, furnished with secondary fleshy laminæ, presenting a like construction. These last are at first found at a more or less right-angle position to the primary ones; further on, their relation to the primary laminæ becomes more acute, the angle being open towards the free edge of the laminæ. The number of secondary laminæ increases rapidly—indeed, so long as the primary continue to increase in height. The secondary fleshy laminæ are found fully represented on the inferior limits of the superior third of the podophyllous tissue; as a rule, before attaining this situation their number is fifty or sixty to each primary lamina.

From the known variations in the direction of the wall, the secondary fleshy laminæ present some diversity in their course towards the inferior border of the fleshy wall. The secondary horny laminæ, as well as the fleshy, increase constantly in length (height) as they proceed downwards: at first more abruptly, then more slowly; both, however, being higher. In thickness they coincide with each other. *While the secondary fleshy laminæ in this relation gradually decrease, become weaker and thinner, the secondary horny laminæ increase in like ratio.* As already remarked, the secondary horny laminæ are composed, for the greater part, of slightly or non-hornified *rete* tissue. The formation of these *rete* masses is, therefore, the function of the secondary fleshy laminæ, as also the podophyllous tissue. As the horn-forming process takes place very slowly in the cells, so must the thickness of the "Stratum mucosum" upon the fleshy wall increase from its superior to its inferior limits,—a circumstance of much importance in considering many pathological processes in this organ. This result takes place at the expense of the fleshy wall. Not only do the secondary fleshy laminæ lose in dimensions, in ratio with the increase of the secondary horny laminæ, but the thickness of the more connected and

deeper layers of the fleshy wall likewise becomes less from above downwards. *The rete tissue grows at the expense of the corium, at the same time penetrating its tissue.*

From the above remarks, we are able to understand exactly the nature of the reciprocal relations existing between the secondary horny laminæ and the secondary fleshy laminæ ; and here also is to be found the key by which to explain why it is possible for such a production to take place inside of a closed and unyielding horny capsule. The corium—the fleshy wall—must itself supply the space required by the newly-generated mass, so that its own production becomes less also. The correctness of this assumption is proved by direct measurements, as will be seen by the following table :—

	Measurements taken from the inferior limits of the superior third of a normal foot.	Measurements taken from the inferior limits of the fleshy wall or podophyllous tissue.
1. Thickness (height) of the primary fleshy laminæ	0·1 —0·2 mm.	0·05 mm.
2. Thickness (height) of the secondary fleshy laminæ	0·04—0·08 ,,	0·02—0·05 ,,
3. Thickness (height) of the primary horny laminæ	0·03—0·05 ,,	0·03—0·05 ,,
4. Thickness (height) of the secondary horny laminæ	0·03 ,,	0·08 ,,
5. Width of secondary fleshy and horny laminæ	0·15 ,,	0·25—0·35 ,,

It should be remarked that these are but average results, the chief importance of which lies in their relation to each other ; for it is self-evident that the variations in form and size of different feet must also give like variations in measurements.

The variations in form which the laminæ offer in their course from the coronary limits to those of the lower margin, are the following :—

1. The increase in height, proportionally most marked upon the secondary laminæ, and continuing the entire length.

2. The thickness of the fleshy laminæ decreases ; the primary horny laminæ show no essential deviations in this direction. The secondary horny laminæ, however, show a considerable increase in thickness.

The productive activity of the fleshy wall consists chiefly in the generation and increase of the secondary horny laminæ; for the increase in extent (*Verbreitung*) of the primary horny laminæ is the effect of their secondary horny laminæ. The latter consist, as has been already noticed, of *rete* cells, the majority of which are not at all, or only in part, hornified. Only the oldest of these cells—those which are in immediate relation with the primary horny laminæ, and those formed in the middle of the secondary laminæ—undergo this process gradually; so that a transverse section of the primary horny laminæ presents a very irregular border, their surface being covered with slight elevations (*Leisten*), which alone deserve the name of "secondary horny laminæ." Those *rete* cells upon the inferior margin of the fleshy wall become transformed into horn, and contribute to the formation of the so-called "white line" between the sole and wall.

We can see, from what has been said, that the horn-generating ability of the fleshy wall is very unimportant; any increase in thickness of the hoof from this source is not worth mentioning This is not the function of the fleshy wall or podophyllous tissue; its task is to provide a firm union between the hoof and the *os pedis*, while at the same time this union must be of such a nature as to allow the continual growth of the horny box from above downwards, without in any manner impairing the solidity of this union. This principle is manifest in the structure of the entire fleshy wall. Nature has conformed all to this requirement.

As already shown, the firmness of the union between the horny capsule and the *os pedis* is secured by the closely woven and tensely outstretched elastic and connective tissue, and also by the enormous increase in the surface of the cutis. The remaining portion of the task is to provide a bond of union between the sensitive corium and the dead mass of the hoof, without injury to the former, and at the same time admit of the gradual growth downwards of the latter. To this end is the immense mass of reticular tissue deposited between both. As in all parts of the true cutis such tissue forms the intermediate substance between corium and epidermis, so here within the hoof-capsule the constancy of natural laws holds good. The cellular nature of this tissue also adapts it wonderfully for its

second task—the downward growth of the hoof-wall. Those elements which are capable of moving without injury to themselves or to the tissue, contribute most wonderfully to the above-mentioned necessity. The horny capsule, in its downward growth, thus takes with it some of the cellular element of the *rete*, whose departure is immediately compensated for by those more profoundly situated. In this manner is a disjunction of the connection between *os pedis* and hoof-wall rendered impossible, while at the same time the continual movement spoken of is maintained. I can, therefore, but reiterate my former views *—viz., that the productive activity of the fleshy laminæ is not of special importance for the hoof, either in intra- or extra-uterine life. During the period of development, on the contrary, the same play a prominent part in the development of the fleshy sole.

Authors have spoken of the great productive power of the fleshy wall without sufficient justification; having drawn their conclusion from pathological conditions, and transferred these to normal ones, in order to show how the development of the horny laminæ took place. What *may* take place under pathological conditions, is by no means a logical necessity in physiological states. This manner of drawing conclusions is to be likened to a man who would conclude as to the nature of the volar epidermis of all men, by studying that of a smith or other hard-labouring man. Every irritation of the elements of the fleshy wall excites an enormous multiplication of these elements; and if the exposed fleshy laminæ are in a condition to protect themselves with thick masses of horn, this is no proof that they must always produce such masses, but only shows that under certain conditions they can produce an epidermic covering.

It is not my intention, at this moment, to enter into an exhaustive criticism of the various views entertained upon this subject. According to the conclusions I have here presented, it seems evident that none of these views can lay claim to absolute correctness.

The question as to whether the coronary cushion or the fleshy wall shall be looked upon as the matrix of the horny laminæ,

* *Magazin für Ges. Thierheilkunde von Gurlt u. Hertwig*, 1872.

is narrowed down to the inquiry whether the narrow groove situated between the coronet and the fleshy wall is to be considered a part of the former or of the latter? It does not seem as if there need be any doubt or hesitancy in considering it as a portion of the fleshy wall. Where laminal construction begins, is the beginning of the wall. We must not place the ideal surface of the fleshy wall at the base of the laminæ, but upon the free edges of the same; therefore this part evidently belongs to the fleshy wall.

These considerations give us the explanatory key to many pathological processes occurring in the keratogenous membrane. The presence of the "Stratum periostale" (composed, as we have seen, of a dense network of elastic and connective tissue, and very few bloodvessels and lymphatics), and its intimate relation with the *os pedis*, must be looked upon as the reason why inflammatory processes in this part and the sole do not at once extend to the osseous tissue. If, however, this tendinous tissue become involved in a suppurative process taking place in its vicinity, it shares the fate of tendons or cartilage—becomes necrotic; and this last process is generally complicated with necrosis of the *os pedis*. In such cases, sequestræ of the *os pedis* take place quicker than upon the "Stratum periostale" of the keratogenous membrane. The necrotic piece of bone is often detached long before the necrotic portion of the "Stratum periostale,"—so that one often finds it necessary to perform an operation for the removal of the necrotic parts. Inflammatory processes occurring on the surface of the fleshy wall always follow the course of the laminæ, and finally appear at the coronet. These are those processes which take place in the richly-developed *rete*, situated upon the surface of the corium. These must naturally reach the coronet sooner than any other portion, on account of the laminal structure, even if the entire surface of the wall is involved. The arrangement of the coronary papillæ in rows, and in a course corresponding to that of the laminæ, favours this breaking out at the coronet; so that one may seek the focus of the pathological process by following the course of the horn-tubes.

The presence of a subcutis, and the immediate connection of

its various parts with portions of the keratogenous membrane, makes clear to us many pathological changes, especially the extension of inflammatory processes from the fleshy wall and sole to the cartilages, and the manner in which cartilaginous fistulæ (Quittor) are developed, as well as the complications of the tendon of the *flex. dig. profundas* and the *os naviculare*, by suppurative processes in the tissues of the fleshy frog and frog-cushion. These processes are in general of phlegmonic origin. The difference in gravity of the inflammatory processes in the single divisions of the keratogenous membrane, find a scientific explanation in the variation in its anatomical structure. To make this manifest has been the aim of this contribution.

[The conclusions at which Dr. Moeller arrives, in his very interesting paper, with regard to the functions of the laminæ and particularly the share the vascular leaves have in the production of the horny leaves, are quite in harmony with those we had formed after our extensive series of observations in 1870 and 1871, and which are alluded to in Moeller's valuable article. In a contemporary journal, in 1871, we wrote: "There can be no doubt whatever as to the keraphyllæ (horny laminæ) being generated at the lower margin of the coronary cushion, at the part we have designated the 'coronary or white zone,' and at the junction of this with the vascular laminæ. We have remarked that in this situation the villi are so disposed as to leave narrow spaces between them, and that these spaces correspond to the more or less regular linear imprints in the cutigeral cavity, and which are continuous with the horny laminæ. This feature alone would almost suffice to prove that these leaves commence to be formed at the coronary zone, and that they are part and parcel of the wall itself—not a subsequent formation proceeding from the podophyllæ (vascular laminæ), and merely attached to it by simple agglutination, as has been imagined. The horn-cells or epidermic material intended for the constitution of the horny laminæ, is formed on the surface of the coronary zone, and between the vascular laminæ at their origin; the latter serving as a mould, so to speak, in which this horn material receives its characteristic shape. . . . Under ordinary conditions,

therefore, the podophyllæ contribute but little towards the formation of the horn plates with which they interdigitate, and that only at their commencement, where they combine with the coronary cushion to complete the keratogenesis and lamellar configuration of the inner face of the wall of the hoof.' We need not say that we are glad to find our views on the anatomy and physiology of the horse's foot confirmed by such a painstaking and able investigator as Professor Moeller, and we hope he may continue his researches in this direction.—Ed. *V. J.*]

TRANSMISSION OF ANTHRAX FEVER BY THE INGESTION OF DISEASED FLESH.

In the *Annales de Zoötechnie et de Méd. Vétérinaire*, there is an account of the transmission of Anthrax to dogs, by the ingestion of the flesh of a cow which had perished from the disease. The carcase lay in an isolated place unburied, and as it was winter, no person or animal, save dogs and wolves, could get near it. Of seven dogs which visited the carcase to feed, five succumbed on the evening of the same day, the other two being extremely ill. All presented symptoms of Anthrax Fever at its maximum : extreme prostration, tumultuous beating of the heart, flanks excessively agitated, diarrhœa, etc. The cow had received no medicines, the only treatment to which it had been submitted being friction with oil of turpentine on the skin.

In the *Recueil de Méd. Vétérinaire*, M. Dus, of Mehun, gives a description of an outbreak of Anthrax among pigs, dogs, and birds, evidently due to the same cause. Four days previously to his having been called in to attend the former, a cow had died suddenly in the village, was skinned, and the carcase left unburied not far off. On the day on which he was sent for, the pigs had found their way to the dead cow, and ate as much as they desired. The pigs were a boar and four sows. The chief symptoms were dulness, the creatures lying buried beneath the litter, and loss of appetite. In one the voice was husky and weak ; in another, which was dying, the prostration was so great that it could not get up, the flanks were agitated as if it had been running fast and long, the voice had nearly disappeared, and there was a slight œdematous swelling about the throat, the skin of which had a violet tint. The autopsy revealed pathological changes similar to those found in Anthrax Fever, except that the spleen was not enlarged.

It afterwards transpired that an empiric had been treating the cow when it was nearly dead, and that he had introduced his arm into the rectum, with the object of emptying it. When he withdrew it, it was covered with blood, and this was removed by washing with cold water. In two days there was great itching in the arm, caused by the presence of two small pimples, which soon became developed into an unmistakable malignant pustule—from which, in three days, he perished. Two dogs belonging to him, and which ingested the matters he vomited, were attacked a few hours subsequently ; and one, which was young, died in twenty-four hours ; the other recovered.

The village dogs, to the number of about twenty, which had regaled themselves on the remains of the cow, were all seized with illness, and at least five of them died. Near where the carcase lay, several magpies and crows were found dead. No other cases of Anthrax Fever in cattle were witnessed in the village. This, therefore, must have been one of a purely sporadic kind.

Editorial.

THE PREVALENCE OF GLANDERS AND RABIES.

We have often drawn attention to the gradual increase in the prevalence of certain contagious diseases of animals, other than those which, from their greater contagiousness or rapidity of extension, as well as destructiveness or troublesomeness, attract more notice. On several occasions we have pointed out that two most serious maladies—Glanders and Rabies—transmissible and invariably fatal, not only to the species of animals in which they originate or to which they are peculiar, but also to other species and mankind—are now alarmingly prevalent, and likely to continue so; as we cannot discover that, in this *laisser aller* country of ours, any sufficient or efficient steps are taken to check or suppress them. With regard to the first-named disease, it is certainly the fact that we have no means of arriving at a satisfactory conclusion as to the extent to which it prevails; but that glandered horses are numerous, and that they traverse the streets and drink in the water-troughs of our towns and cities, cannot be denied. This is, we believe, well known to very many veterinary surgeons—one of whom, not long ago, volunteered to show us at least thirty cases of the loathsome and dangerous malady within a very small district in London. The horses chiefly affected are those worked at night in cabs, when the existence of the disease is difficult, if not impossible, to detect. When suffering from Glanders in a chronic form, horses may be utilised for months, and sometimes years, and be at the same time active agents in the dissemination of their disorder. That the malady is common in cab-horse stables, and that it occasionally destroys human life, is exemplified in the interesting case recorded in the *Lancet* for September 29th, of an unfortunate stableman who died of Farcy in St. George's Hospital, and who had been in contact with glandered and farcied horses for five or six months previous to his illness, and for thirty-one days subsequently. And a few weeks ago we were invited to St. Bartholomew's Hospital to see a dying boy, who was supposed to be suffering from Farcy, which, it was surmised, he had got from drinking out of public water-troughs: at least, the origin of the disease could be traced to no other source. Other instances of our fellow-creatures perishing from this transmitted scourge have recently appeared in the medical papers; so that, in addition to the loss of property caused by Glanders, we have people destroyed by this painful, lingering, and most disgusting disease.

The reason for the prevalence of Glanders is simple. We have no proper laws to suppress it, nor, if we had them, are there any agents for carrying them effectively into operation. The police are, in reality, the detectors of the disease; but even if they could recognise it, or knew of its existence in stables, they have no power of entry into these. Until there is a suitable sanitary organization to deal with this and other contagious maladies of animals, we must be content to suffer in property and person. The Veterinary Department of the Privy Council frames

laws according to its lights, but leaves their execution to Providence and the local authorities. It requires no gift of prophecy to foretell what will happen under these conditions.

With regard to Rabies—a disease which the Veterinary Department does not recognise—the present wide-spread outbreak was foretold by ourselves so long ago as 1872. When engaged, in 1866, in collecting materials for the last portion of our "Chronological History of Animal Plagues" (published in 1871), we were struck by the increase in frequency of this disease; and the certainty that it would continue to extend its area and become more prevalent, induced—we had almost said "compelled"—us to publish a monograph ("Rabies and Hydrophobia") on it in the following year. In the preface to that work, after alluding to the many cases of Rabies and Hydrophobia reported, is the following passage: "There can scarcely be any doubt that this prevalence and extension of Rabies is largely due to the ignorance prevailing with regard to its nature, the symptoms which precede its more violent stage, and the almost total absence of efficient veterinary police measures to suppress it, as well as to the existence of dangerous errors, which have become so deep-rooted in the popular mind, through their transmission from generation to generation, that it would seem an almost hopeless task to attempt their eradication." And again, at the conclusion of the historical portion of that work, when dwelling on the progress the disease had made since 1866, it is stated that "the wide and serious extension of this epizoöty over the country appears to have been largely, if not altogether, due to the insufficiency of the police measures adopted in the different districts, the late period at which they were introduced, the want of a proper and uniform sanitary organization to combat the spread of this and other contagious diseases of animals, and the general ignorance prevailing with regard to its symptoms and nature." It was also insisted that, unless suitable measures were devised, this country would be severely visited by Rabies and Hydrophobia. In 1875, in "Veterinary Sanitary Science and Police" (vol. ii. p. 222), attention is still more persistently drawn to the fact that the disease was yet more common, and was occupying a wider area; and since then, in the pages of this Journal and elsewhere, we have not ceased to refer to it. Almost every day we find deaths from Hydrophobia recorded in the newspapers, and the medical journals are continually reporting them: quite recently, one number of the *Lancet* had an account of no fewer than three cases. Rabies has appeared in parts of the country where it has hitherto been almost, if not altogether, unknown—as in Scotland and Devonshire; and in London, where it used to be very rare indeed, it is now becoming a comparatively familiar disease; while the number of people bitten by dogs is something more than extraordinary.

For years we have stood alone, as is proved by the evidence we have adduced, in protesting against the culpable carelessness and apathy which leaves the community exposed to the pains and panics of Rabies and other maladies of this class, and we suppose we must continue to do so for a long time to come. Seeing the risks to which veterinary surgeons are liable in their dealings with the two diseases just mentioned,

we would anxiously remind them of the great need there is for exercising care, so as to avoid becoming infected by either of these fatal scourges. They may also render a great service in this direction by warning others, and impressing upon them the necessity for precautions.

ANIMAL PLAGUES IN AMERICA.

THE New York correspondent of the *Standard*, writing on September 29th, in alluding to a serious epidemic of Yellow Fever among the people of Fernandina and other tropical and semi-tropical parts of that region, mentions an outbreak of Texas Fever which appears to have caused some alarm, as well as Diphtheria among animals. He says :—

"The Cattle Fever, commonly known as the Texas Fever, like the pest of Fernandina, is awaiting the coming of frosts. Frost arrests all these southern Fevers, as well in beasts as in men. As early as the 8th instant, there were reports of cattle dying of Texas Fever in the northern and western states—especially Ohio and New York States; and on the 24th it was reported by trustworthy parties as raging with much activity among the cattle in Delaware county, in this state. All the neighbourhoods affected trace its origin to Texas cattle; and one writer describes it as always appearing with the tick generally found on Texas cattle. Frost will arrest it there in a few days. Wherever Texas cattle or 'Indian stock' have been brought—and the active beef markets of Texas and Indian territory have pushed them all over the country almost—the Fever follows. When droves of beef-cattle are driven across the country the disease follows the track, thus clearly establishing the connection between the cattle and the Fever. In Ohio, Pennsylvania, New York, Kansas, and some other states, this Texas Fever has appeared, following the trade tracks of dealers in south-western cattle. It was not known in New York probably earlier than 1868, but since then it seems to have appeared every year, ending its ravages with frost, which is rarely later than the 1st of October. In Ohio, the newspapers have represented the ravages of the Fever as widespread; but the object of the agitation seems to have been to induce farmers to take precautionary measures to prevent its spreading. They reproduce a report issued by the Missouri State Board of Agriculture, from which we learn that the disease first appeared in that region in 1853, from a drove of Texas cattle sold in Sarcoxie county, Mo., the winter before that time. Again, in 1866, a herd of 3,000 beef-cattle started into Missouri from the south; but the citizens, warned by the experiences of 1853, met and required the drovers to turn back. That year and 1867 were marked by exceptional fatality of the disease—single counties losing cattle, it is stated, to the value of 300,000 to 500,000 dollars a year. Works on Cattle Plagues trace this disease still further back; and a writer in an Ohio newspaper, Mr. John Yonkerman, a veterinary surgeon of Cleveland, gives this account of it: 'The disease now prevailing among cattle in our immediate vicinity and community, known as the Texas Fever, is the same as existed in Barendrecht, South Holland, in 1844, and was first discovered on September 21st of that year; and a few days after it was found to have broken out in Jesselmonde, Riderkerk, and several other places. At first it was thought to be a disease called the Pestbrand, which had been there a few years before, but upon examination it was found to be another disease—namely, Snot-vaar. It was also discovered in Germany, and known there by the name Catarrfieber (Catarrh-fever).' The Germans appear to have traced the disease to the eating of some poisonous plant which

affected the blood and the lungs, causing the discharge from the nose by inflaming the lungs and windpipe. 'Nevertheless,' Mr. Yonkerman adds, "this disease is classed under pest diseases, such as Spanish Fever, Pest-brand, Rinderpest, and others of that nature, and therefore the so-called Texas Fever is liable to go into either of the above-named pest fevers.' *

"The western agricultural societies are taking steps, and looking to a strict quarantine of all Texas cattle, meaning to prevent the future spread of the disease by preventing the introduction of the cattle that so invariably bring it among them. And yet a cattle dealer of Cleveland takes the ground that the same disease has been prevalent near Cleveland to a greater or less extent for fifteen years, and his experience goes to show that Texas cattle do not communicate it to the natives. The secret of the whole matter is probably to be found in the fact that southern cattle (just like any other animals), acclimatized to 33 degrees of north latitude, suddenly, and by unwholesome means, transported to 41 degrees, will generate fatal disease of some sort; and northern beef-dealers are but too ready to find some reason to exclude the competition of southern cattle raisers. But, whatever the origin, it is a painful fact that apparently contagious fevers are carrying off thousands of the best cattle in the states named, especially in Ohio and Pennsylvania; and the utmost precautions are necessary to arrest the pest, whatever it is, in the future. In this connection, mention may be made of the recent failure of the Samuels Brothers, exporters of cattle and beef from this city to Europe. Their creditors, representing claims for nearly 200,000 dollars, it is stated, have signed a settlement accepting 25 cents on the dollar cash and five cents on time. One of the firm reckons their losses at about 50,000 dollars. The Messrs. Eastman and Co., who were the pioneers at this new branch of trade, are said to have succeeded fairly well; but the business in general is considered rather risky. The Texas Fever scare which the beef men of Ohio and Pennsylvania are getting up, is designed—if there is a design in it—to damage this exporting beef trade, and it should be carefully scrutinised before believed fully. The new and baffling disease among horses which has made its appearance within the past week in New Jersey, has less commercial importance than the Texas Cattle Fever. At Madison several deaths are reported daily, and thus far none have recovered. The disease has some of the characteristic symptoms of Diphtheria, and seems to be unknown to the veterinary doctors of that little town."

THE PRESIDENT OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE following remarks, relative to the President of the Royal College, appear in the *Army and Navy Gazette*:—"When Sir James Elphinstone retires from the representation of Portsmouth, Major-General Sir Frederick Fitzwygram, Bart., whose seat is at Leigh Park, Havant, has, we understand, consented to offer himself as a candidate in the Conservative interest; and it is certain that Portsmouth could find no more worthy successor to the much-respected baronet, who, for twenty years, has enjoyed its confidence. Sir Frederick Fitzwygram's return would occasion the highest satisfaction in the army, of which he was, until lately, a most hard-working member."

* We fear Mr. Yonkerman's notions of the pathology of these diseases is rather confused. Rinderpest is unknown on the American continent, and we believe the German Catarrh Fever also. We cannot understand Texas Fever passing into either or all of the above maladies, any more than we could human Variola into Measles or Scarlatina.

We need scarcely say that the veterinary profession in this country would hail, with the greatest delight, the advent of our esteemed President in St. Stephen's.

As in the army, so in Red Lion Square and elsewhere, Sir Frederick has worked hard, and most successfully, for our profession, which has no representative in parliament. His presence in the House would undoubtedly prove of the greatest benefit to veterinary science, and to the public; and we have no doubt that those members of the profession who can aid in any way in securing his election as M.P. for Portsmouth, will exert themselves to the utmost to realise this most desirable object.

THE ARMY VETERINARY DEPARTMENT.

Some months ago, we stated that a new warrant for the Army Veterinary Department was being prepared. A contemporary military journal makes the following remarks with regard to it :—"There is at length a chance of the New Veterinary Warrant appearing, as the draft of it has already been submitted, and, we believe, even approved. That the present conditions of service for veterinary officers require to be modified, the state of the Departmental List constitutes a sufficient proof. There are upwards of twenty vacancies to be filled, whilst there are absolutely no candidates for them. But under the vigorous direction of Mr. J. J. Collins, we shall hope to find a more favourable state of things inaugurated."

THE ROYAL VETERINARY COLLEGE.

At the opening of the session of the Royal Veterinary College on October 1st, Major-General Sir Frederick Fitzwygram, Bart., in the chair, Professor Axe delivered the following excellent introductory address :—

"Mr. Chairman and Gentlemen,—To-day may be regarded as the birthday of our profession, and I am entrusted with the pleasing task of addressing you in commemoration of that event. The importance and responsibility which attaches to this duty I have endeavoured to realise in its widest sense, and while I am encouraged by the honour which the task affords to assume the scholar and the sage, I am, nevertheless, conscious of my inability to emulate in sentiment or in diction the least distinguished of my colleagues or their predecessors. An introductory address is a time-honoured custom observed by all medical schools, and thereby admitted to be an essential part of the curriculum. If, however, such was not the case, if those who are just entering on the threshold of science, and others who have already passed beyond her portals, were not enriched by an inaugural thesis, there is surely in these reunions of the profession, these assemblages of long-parted though kindred spirits, these gatherings together of past generations of men, a sufficient motive for the continuance of introductory lectures—aye, to the end of time. In this assembly I recognise many pupils of the oldest and most revered of our staff, men who bloomed in the spring-time of our craft and bore the burden of her launch. Many of those lusty voices which raised the loud cheer as the untried bark left her moorings have passed away; but the still remaining few bring with them an inspiration and a charm to such assemblies as the present, and lend a dignity and value

to our proceedings here which we long desire to enjoy. Those who have ventured to regard introductory lectures as merely matters of form, 'more honoured in the breach than the observance,' can have no sympathy with social influence, and still less with the young minds that are eager to embrace and follow the counsel and precepts of those who for years have watched the follies and failures, the honours and achievements of student-life. But for the demands of duty I would gladly quit the oft-beaten track and discourse new themes which time and circumstances have pressed into the legitimate sphere of our contemplation. I might invite you to consider the ever-enlarging relation of veterinary science to other scientific institutions, as well as to the country at large. I might descant on the identity of those laws which govern diseased processes in man and the lower animals, and the uniform principles which dictate and guide the practice of human and veterinary medicine; but the connections of these two branches of physic find their most complete elucidation in the symmetry and interchange of disease and the life-history of parasitic creatures. No less important are the ties that bind us to law than are those which bind us to the sister profession, whether we regard the former in its statutory or administrative capacity. It is a healthy and a cheering reflection that the services of our profession contribute in no small degree to our national justice and humanity. Every day the contingencies which attach to some of our patients are made the pretext for litigation, either at the instigation of ignorance, or the odious trickster, whose devices and villainy encompass and foul the infirmities of horseflesh. It is here that our special training is recognised and applied to the administrative function of the state. It is here that the science of veterinary medicine declares its existence and power for public good. If I could point to no other relations of law and veterinary science, enough has been said to indicate the growing importance of our calling; but I recognise in the Contagious Diseases (Animals) Act, and the precedents which govern the law of horses, an embodiment of scientific data peculiarly our own. It is in regard to that section of political economy which deals with the food supply of the nation that veterinary science claims its more intimate relations with the people; and the fact that nearly two-thirds of the losses which overtake our meat stock are the result of causes completely within the control of a judicious application of hygienic and sanitary principles, imposes on us a serious responsibility. Were I permitted, I might show how vast is the field for scientific enterprise opened up by this question, and how wide and complete the range of knowledge required to grapple with all its details. If there is one subject in which the wisdom of recent reforms in our educational system stands out more boldly than another, it is in this—the science of preventive medicine. It is here that laurels are to be won, but only by the patient, energetic, determined exercise of the highest culture which you can command. Leaving to the senate house and the senators of our profession general political considerations, forms of government and means of progress, I propose to address myself more especially to you who commence to-day the most important mission of your life—you who perhaps for the first time accept the responsibility of self-government, and the honour of your name and calling. Firstly, then, let me congratulate you on your choice of our profession. By it you enter into the service of science, and accept the manifold obligations which she and her votaries impose upon you. In all ages the practice of medicine has been regarded as the most sacred of callings. To assuage pain, to alleviate suffering in all its varied forms, to preserve health and prolong life, is the noble undertaking you have endorsed by your presence here to-day; and I would ask, can it be that the absence of articulate speech, or the higher mental endowments of man, renders the exercise of our calling less noble or humane? No! Man's humanity to beasts

becomes his moral nature no less than his humanity to man. While the psychical attributes of the latter add dignity and power to a physical organization which we regard as perfect in all its details, the subservience, utility, and beauty of the former commend them to our care and protection in the name of God. Indeed, to minister to the unspeakable suffering of the brute world is not only ennobling, but divine. Encouraged by these reflections, you will start on your journey armed with a well-attested general education—an education which has been considered sufficient to enable you to appreciate the nature and importance of vital phenomena, and to apply the principles arising out of them to the exercise of your future calling. It may be that many stages of this journey will not have been accomplished before difficulties block the way. Some exaggeration of the task before you, some weak place in your education, some want of attention, or feeble application, some lack of patience or want of heart to persevere, will probably beset your path. Here, gentlemen, the soothing biography of greatness, the encouraging, nay, impelling history of men, communities, and nations, will serve to dispel these illusions, to rouse and concentrate the mind, to stir and quicken thought, and create a healthy and lasting ambition, beneath which fear, fancy, and weakness will steadily decline. One of the greatest of human failings is self-distrust—that abnegation of hope to one's self which lowers the mental tonus and dissipates the will. The wealth and strength of mind which glorifies genius, exalts the man, and triumphs over triumph, can never be developed under the restrictive qualms of such a condition. Encourage, then, in your career that spirit of self-reliance, of indomitable perseverance and unceasing energy which modelled the art and science of medicine out of a crude empiricism. Banish from your minds the idle, ignoble hope that accident will bring what work alone can achieve, and strive after that proud and manly sentiment so honestly expressed by Sir Humphrey Davy when he said, 'What I am I have made myself.' Exuberance of riches and baubling titles may and do fall to the lot of the indigent and ignorant, as well as to the intelligent toiler in business, art, and science; but the greatness of material wealth is the meanest of man's possessions—the thief that stifles the golden impulse to greatness, and too often abdicates in favour of poverty and ruin. The history of great men is the history of industry and progress—nay, the history of conquest and civilisation. In the ranks of medicine I might point to many whose achievements are as great as the victories of arms, and whose brilliant examples I invite you to emulate. John Hunter, that knight of the hammer, that type of energy and enduring application, commenced his noble task under disadvantages and difficulties which I venture to think do not encumber the path of any one of you. Without an education, he found himself, at the age of twenty years, in the humble capacity of a carpenter, and with just such means as his daily work afforded. But he inherited an iron will—that mighty instrument of great men—and as he plied it to the fixed purpose of his life, it grew in force and extent, under the genial warmth of success, until difficulties became incentives, and out of a life of the purest and most unceasing devotion to Nature's works, was evolved the foundation of zoology and surgery, and the most comprehensive exposition of the science of biology that individual efforts ever accomplished. In the lives of Harvey, Jenner, Bell, Marshall Hall, and others, we recognise the same spirit of industry, the same noble example—the warriors of medical science. Let me congratulate you, gentlemen, on the selection of a school no less than on the choice of a profession. I need not place before you in review the history of this institution. Like all others of its kind, its work has been slowly—too slowly, I fear—progressive. The reforms, however, of recent times have multiplied its teaching resources and appliances to a degree which renders it (and I speak on the authority of Continental teachers) one of the most com-

plete veterinary schools in Europe. I tell you this in no spirit of prejudice or vainglory, but in a spirit of honest pride, without which I should be an unworthy representative of our profession, and of the school to which it owes so much. No ; to kindred institutions we hold out the hand of fellowship, and while in our common weal we rival them in excellence, we admire and honour their struggles and successes. Those of you who can reproduce in your minds the days of Coleman, and glance back over the whole retrospect, comparing the present with the past, must needs exclaim, What changes, what improvements, what hopes of progress, since that time when the whole range of the art and science of veterinary medicine claimed but one exponent—when the principles of medicine were unknown in our midst, and the dogmas of tradition and authority usurped the place of science !

" I have suggested to you how complete is the school you have chosen at which to equip yourselves for the battle of life. Let me now place before you the means for carrying out this purpose. We offer you an infirmary containing over one hundred patients, embracing horses, cattle, sheep, dogs, and other domesticated animals ; and among them will be found cases as interesting as they are varied. To meet the requirements of recent reforms in the curriculum of the school and the general course of education, an additional large lecture theatre has been added to the institution, making now three in all. This course has been adopted, wisely I think, for the purpose of facilitating the teaching department and economising the time at your disposal. Moreover, we offer you a large well-appointed museum, rich in specimens illustrative of healthy and morbid anatomy, parasitology, and botany ; also a dissecting-room, a *post-mortem* house, a chemical, pharmaceutical, and I hope shortly will be added a physiological laboratory. With means so comprehensive, and a teaching-staff of large experience and repute, anxious to uphold the honour and welfare of our *alma mater*, the success of your mission here must be the measure of your industry, against which there can be no appeal. The governing body of this institution have been no less munificent in providing for your comfort than your education. To this end a new reading-room has just been completed ; and in the name of you all I ask that that may shortly be supplemented by a library worthy of the school and the profession. The liberality which is at all times displayed by the governors of the College in the administration of their trust, and the solicitude evinced by them in your behalf, encourages me to hope that this request will not be made in vain. With a plentitude of means such as I have described, it now remains for me to point out to you the manner and importance of their application. But before I do so, let me briefly indicate the immensity of the task you have undertaken, and the spirit and mental qualities which must be brought to bear ere the goal of your ambition is reached. You have entered upon the study of the most comprehensive of that group which compose the circle of Science's medicine. I say the most comprehensive, because its foundation is based on the laws of life ; and how vast, how limitless, in magnitude and extent, are the influences which concur to make up that grand, that exquisite system of vital order ! As compared with theology and law, the study of medicine rises like a giant. Wresting authority from the organic and inorganic world alike, it spreads, and pushes its searching arms into the most secret recesses of Nature, and exhumes her buried treasures for the succour and preservation of beasts no less than man. It is not the mere contemplation of animals themselves, nor of the parts within them, nor of their habits, nor the houses in which they abide, that makes up the sum of a sound medical education. The lines of inquiry extend far beyond these. Indeed, the study of medicine is a survey of Nature, confined to no clime, limited to no species, and comprehending the ever-varying circumstances and conditions affecting the outer world. To

aid, therefore, the accomplishment of her objects requires the highest culture.

"The history of medical education as applied to veterinary science is a sad one, and when viewed by the light of progress in general science it stands alone in its limping hesitancy and subdued indifference, an object of remorse. While all that relates to medicine has continued during the past twenty years to move apace, tending to develope and consolidate a rational curative and preventive system, the principles inculcated have been disregarded by our profession, and by some even covertly condemned. A new era, I am proud to say, dawns to-day. The students of 1877 commence their studies under auspices which have known no parallel in the annals of our *alma mater*, and the education scheme applicable to prospective pupils fills us with hope that the days of empiricism and mechanical horse-doctoring are doomed to oblivion. The standard of general education, as prescribed for the present and now contemplated for the future, is a sign of the times. It suggests an awakening to the calls and demands of a growing intelligence which pervades all classes of society, from the cottage to the palace. Much as I delight in and welcome these changes, I cannot but regard any scheme which aims at a medical education as defective that does not comprehend an elementary knowledge of physics and both the Greek and Latin classics. Without the former every process of life must appear to you as through smoked glass, and without the latter medical terminology has no value, and can only be made available at the cost of much time both to yourself and teacher.

"It has been said, and with all the force of reason, 'If the lecturer does not communicate much of that knowledge which he endeavours to explain, it is not to be attributed either to his want of skill or to the insufficiency of his apparatus, but to the novelty of the terms he is obliged to use. Ignorance of the language in which any science is taught is an insuperable bar to its being suddenly acquired; besides a precise knowledge of the meaning of terms, we must have an instantaneous idea excited in our minds whenever they are repeated, and as this can be acquired only by practice, it is impossible that philosophical lectures can be of much service to those who are not familiarly acquainted with the technical language in which they are delivered.' Again, nothing can be more obvious than the vast influence which natural philosophy has exercised in promoting the march of medicine. By the light of its laws we comprehend the nature of those forces which operate in and upon the organic world. The principles of mechanics, hydraulics, optics, and acoustics, find expression in the movements of the body, the action of the heart, and the senses of sight and hearing. Gentlemen, I might still further urge the claims of physics as a part of your education, by pointing out to you the medical aspect of heat, light, and electricity. The importance of these several branches of natural science as parts of the domain of medicine cannot be over-estimated, either in regard to results already obtained, or in the promise of their extended application. By means of the clinical thermometer we are enabled to gauge the temperature of the body, to measure the extent of tissue change, and to diagnose the presence and progress of disease. The value of this method of inquiry to us who have to deal with dumb animals, and who have to rely exclusively on objective phenomena for our guidance, is inestimable: the more so because it affords definite results, and announces the initial stage of disease when all else besides is silent. Moreover, the ophthalmoscope and the microscope, to which the science of optics especially applies, are among the most interesting aids to diagnoses and prognoses; while electricity, though so subtle in its nature, bids fair to rival the most dominant of curative means. Since the introduction of the ophthalmoscope a luminous reflex from the

interior of the eye is an accomplished fact, and the old dogma that attributed to the choroid such a voracity for light has succumbed to experimental inquiry. The visual organs, therefore, no longer remain inscrutable corners in the animal frame, but, like others formerly hidden from view, their inmost recesses are now laid bare to us by the application of physical science. How much more has been revealed and brought within the sphere of medicine by that extended vision which the modern microscope affords, I need not tell.

"Sufficient has been said, I hope, to assure you that physics, as a part of the education of the student of veterinary medicine, cannot long be disregarded. I might almost go so far as to say, must at once be insisted on, unless we are contented to return to that state of professional littleness and empiricism from which we are now emerging. The preliminary or general education of the veterinary student is an important and pressing question. It strikes at the root of all future advancement, and whoever consummates the innovation which shall ensure to future students a foundation of scientific knowledge at the outset of their medical career will have deserved the thanks and congratulations of the profession, the public, and the state. But it is my province to-day to introduce you to those studies which, during the next two years and a half, will require your undivided attention. In doing so, my earnest desire is not only to indicate their nature and importance, but at the same time to mark out for you the best and surest mode of pursuing them. The limited time at your disposal for the accomplishment of your purpose will necessitate the closest observance of method in your scientific work, and the cultivation of those habits of thought which so largely conduce to success in training the mind to a sphere of usefulness. Let it not be forgotten that the application of veterinary medicine encompasses a large area. It deals, not with an individual animal whose habits and conditions of life are those of our own, and with whom we have common sympathies, associations, and means of verbal interrogation and intercourse, but embraces the whole of our domesticated creatures—and these are as varied in their structure as they are diverse in their ways and mode of living. If, therefore, we are exempted from the abstruseness and perversity of psychological medicine, we have, nevertheless, a wide and varied field for the exercise of our powers of thought, and one worthy of all our energies. Inasmuch as it is with Nature you are about to deal, the first lesson you will require to learn pertains to her and her ways. How life is sustained and influenced by the outer world should be the aim of your highest endeavours to comprehend. It is here, in your early acquaintance with or disregard of the laws of life, that success or failure will wait upon you.

"In searching after phenomena of health or disease, every sense will at one time or another require to be brought into play; and what the eye sees, or the ear hears, or the fingers feel, to be of value must leave a fixed idea in the mind, ready to be called up for comparison or association whenever occasion requires. It is this grafting of objects in the mind that constitutes true learning, and marks out the student of nature from the mere man of knowledge. 'Knowledge and wisdom, far from being one, have ofttimes no connection. Knowledge dwells in heads replete with thoughts of other men; wisdom in minds attentive to their own.' Do not rely on first impressions, nor on primary inferences, be your powers of perception ever so keen and clear. Let all your observations and conclusions be reviewed and tested by repeated appeals to the source from whence they come. If you follow this method honestly and with such liberality as the spirit of science demands, you will find how much which to-day you regard as true you will require to cancel to-morrow, and how much more you will need to correct as time passes on and experience grows. Disheartening though it may seem, and tricky as may

appear the enterprise of medicine, depend upon it success can only be reached by the bold hand that blots out errors and by a continuous assault wrests from Nature her sublime and simple truths. Let me caution you against the seductive influence of novelty—the tendency of the mind to disregard plain elementary facts, and to struggle untrained with indefinite and complex phenomena. Nothing in the wide expanse of medicine is so mean that the spirit of science may not stoop to possess it. Indeed, it is this humility, this regard for what some persons eschew as trifling and contemptible, that distinguishes the scientist from the mere pretender.

> " 'Think nought a trifle, though it small appear :
> Small sands the mountain, moments make the year.'

"To the former the simplest acts of life are indispensable in the interpretation of biological laws, and the development of medicine as a scientific pursuit. If, then, the studies to which it is my duty to introduce you are to bear fruit worthy of the cause you espouse, every fact, however simple and mean it may seem, must be noted, and the time awaited when you will be able to assess it at its proper technical value. Strive to become what Shakspeare termed

> " 'A snapper up of unconsidered trifles.'

"No amount of observation, however abstractedly considered, will give you the powers of the physician or the dexterity of the surgeon. Regarded alone, it is as seed cast in stony places, or light in the path of the blind. Only when associated with careful reflection and induction can it contribute to the productive faculty of the mind, and thus enlarge your view of Nature's works and ways.

"All of you by this time will have made yourselves familiar with the subjects comprised in our curriculum ; and many, I doubt not, have contemplated them with strange forebodings as they now appear in their seeming disconnectedness. But let me assure you that where honesty of purpose exists there is no reason for misgiving. Difficulties, however great they be, will, in time, yield, and ultimately vanish, before a steady and persistent application ; and that which to-day wears the garb of incoherence and obscurity will to-morrow appear bound by the closest relations, and illumined in all its parts. Anatomy, physiology, and chemistry, are proverbially the basis of the art and science of medicine—the tripod on which this conservative faculty reposes. In conformity with systematic teaching, however, your attention will be first directed to anatomy, chemistry, materia medica, and botany. Now, anatomy is that science which comprehends a knowledge of parts entering into the formation of organized structures. It embraces, therefore, not only the animal, but likewise the vegetable kingdom. In your botanical studies you will be called upon to consider it in this latter connection, and your teacher will then point out to you the technical and general importance which belongs to the structure of plants. It is more especially in regard to the former section that I desire to offer a few general remarks. And, first of all, in respect to the means wherewith a knowledge of this branch of your studies is to be acquired.

"Reading, lectures, and dissections, are the sources from whence your information on this head must be derived ; but let it be clearly understood that, while each of these several methods of obtaining knowledge are indispensable to success, their *individual* importance admits of no comparison. Anatomy is essentially a science of observation, a record of facts, and in itself devoid of all speculative thought. It is when we contemplate it in connection with physiology and medicine that it becomes a subject of reflection, and taxes the powers of the mind. Valuable as may be the

printed page and the timely utterances of your teachers as educational factors, let me impress upon you, with all the earnestness I can invoke, the paramount importance and value of well-executed dissections. If you would become real anatomists, and enjoy the high attributes of the physician and the skill of the surgeon, it is to the subjects themselves, whose ailments you purpose to cure, that your attention must be devoted. No description of parts, however complete and lucid, which your books and teachers can convey, will enable you to secure an artery, to expose a nerve, or to reduce a dislocation. Nor are woodcuts, diagrams, and pictorial illustrations, in regard to teaching, more than means of convenience. Let the light and shade in the one be executed ever so well, and the depth and delicacy of colour in the other ever so truly; let the outline be ever so clear and perfect, and the component parts stand out in the boldest relief that art can give,—they are then mere fictions of anatomy. Do not let it be thought that I underrate the value of such means; and if I have placed them before you with more force than truth, it is that you shall not err, that your anatomy shall not be verbal and shadowy, but sound and substantial. Dissection, gentlemen—methodical, searching dissection—is the only key to this branch of your studies; and in pursuing it, remember that a mere knowledge of the existence of parts does not constitute anatomy, nor is it sufficient to know the attachments of muscles, the course of nerves, and the divisions of vessels. Your observations must go far beyond this. Every particular relating to every organ and part of organs must be registered in your mind—size, form, colour, position, course, and surroundings—so that the species on which you operate may stand before you in life a transparent organism. The aims of anatomy are of the highest and widest description. It affords us a knowledge of the normal condition of tissues, and enables us to recognise the existence of changes wrought by disease. In its medical aspect it stands as the foundation of physical diagnosis; while in regard to surgery it guides the hand, controls the knife, and regulates the application of those extended means, those instruments of precision, which inventive genius has contributed to the relief of suffering and the preservation of life. Moreover, it introduces us to that important and comprehensive sphere of investigation which constitutes the science of physiology. In turning to this division of your studies, you are led from the simple recording of facts to a science of observation and experiment, and one in which your powers of reflection and interpretation of natural phenomena will be taxed to their utmost limits. The structures disclosed to you by the operation of dissection will naturally excite in your minds a desire to understand the purpose for which they are intended. This investigation of the action of parts, and of the influences which sustain and govern them, constitutes the science of physiology. By the light which it affords we comprehend those complex processes which make up the sum of life and the relations of the outer world to living beings. Physiology will explain to you how the crude materials of food become the life-sustaining blood, and how the latter ministers to the growth, development, and repair of the ever-wasting body. Many simple acts of life with which you are all familiar will be placed before you as important physiological truths. The mastication of food, in which we all so much delight, is not the less important on account of its simplicity. I mention this in order that you may not be impressed with the idea that physiology is altogether a parcel of inexplicable mysteries. It is true that instruments of the most elaborate and delicate description are absolutely necessary to the elucidation of many important facts. Nevertheless valuable, however, are the more accessible phenomena, in presenting to us a clear insight into the actions of life and their connection with disease. The aims of physiology, like those of anatomy, are high and wide, and appeal no less to the surgeon than the physician. The success of the former in the

exercise of his calling does not depend alone on his manual skill, or the precision and certainty of his sections, or on the method of readjusting broken parts.

"Other considerations involving a knowledge of physiology contribute in no slight degree to the favour of results. Before the knife is used the part diseased must be viewed, not only in itself, but in its functional relations to others both immediate and remote. The surgeon is assured, by his knowledge of physiology, that the extirpation of a gland on one side of the body will be followed by a compensating enlargement and functional activity of that on the opposite side, and that the balance of life will thus be preserved. He knows likewise that to divide the nerves of a part, as of the foot in Navicular Caries, will afford instant relief. In formidable operations he calculates the chances of success by a searching examination into all the functions of life, and he ministers to the ultimate good result by watching the indications of disease and favouring the obligations of nature. As an aid to diagnosis, it sustains the surgeon and the physician alike. It is, however, more especially in the hands of the latter that the extent of its application is displayed. All those small ailments of which we see so much, and which arise out of disturbed function, are identified and dealt with by us through the light of physiology. So do we predict and recognise the complications and results in which they culminate. Thus it is that in Pulmonary Emphysema we anticipate functional disturbance of the heart, and finally structural disease; while in certain obstructive cardiac affections we look with expectancy towards functional and anatomical changes in reference to the liver. The science of chemistry opens up to you a vast and important field of inquiry, and, being a truly experimental science, should awaken in you a large and active interest. The results which it affords are striking in their accuracy, and on this account its application to medicine should receive your closest attention. Just as a knowledge of anatomy can only be acquired in the dissecting room, so the realities of chemistry must be sought in the laboratory. Gentlemen, the study of chemistry commends itself to you, not only in its relation to physic, but as a means of training the mind to scientific method, and enlarging your sphere and powers of thought. Nothing, I venture to assert, in our curriculum affords you such advantages in this regard. As applied to medicine it enables you to determine the composition of food and the changes which it undergoes in the process of digestion. It explains to you the mode by which medicines act as remedial agents, it defines to you the composition of the tissues and secretions of the body in health and disease, and it aids in maintaining the conditions under which the former may be preserved and life prolonged. From the dissecting room and the chemical and physiological laboratories you will proceed to the wards of the hospital. Here the knowledge which you have obtained will be required to elucidate the nature, causes, and signs of disease, and the means of cure. Thence you will turn your attention to the dead-house, and familiarise yourselves with the causes of death. Most reluctantly do I leave these subjects, clinical study and morbid anatomy, unconsidered; but I should exhaust your patience were I to pursue them, and I feel that the duty I have undertaken to discharge would be sacrificed were I not to appeal to that moral sentiment which I am sure you all possess, and which in times past has done so much for the discipline, dignity, and honour of our school. I have pointed out to you the magnitude of the task before you, and I have endeavoured to show how science is to be won. Now, you have a perfect right to ask, What is the nature and amount of remuneration to be acquired for this generous outlay of money, time, and labour? I have the satisfaction to answer that everything calculated to make life happy is within your reach. If peerages and pensions do not fall to our lot, the golden road to honour

still remains open to you all. Let, then, your aims be high; and, failing to reach the goal of your ambition, you will surely attain an altitude of excellence, pride, and power. It you would be successful as students—and students you will always be—you must understand the value of time, the advantages of method, the force of will, and the influence of character. To appreciate the value of time you must use it, and on this head I would ask you to attend punctually on all your lectures and appointments: punctuality is not only a duty, but an element of politeness, and it is so considered by your teachers. Let every discourse receive your unbroken attention, and carry home the heads of lectures in your note-books, to transcribe and enlarge upon and digest at leisure. Do not encourage the idea that you will have any spare time: that is simply time cut to waste, and to waste time is the most unsatisfactory and expensive of privileges. Method is the soul of economy. An eminent divine remarked of it, that it 'is like packing things in a box,—a good packer will get in as much again as a bad one;' but apart from this consideration, it relieves you of that deep anxiety and fear which belongs to the careless performance of duties. 'Where there is a will there is a way.' Write this good old axiom on the flyleaf of every book you possess, and when resolution flags and failure threatens turn to it, and leave the rest to your self-respect. In your daily associations cultivate a generous and consistent spirit. With high-minded truthfulness seek the respect of those about you; and let dignity, honour, and usefulness be the highest aims of your life. Science will not then blush to own you as her sons, and as true gentlemen the ranks of our profession are open to you."

CONTAGIOUS PLEURO-PNEUMONIA OF CATTLE.

THE following report of a sub-committee, consisting of Dr. Hayden, Dr. Grimshaw, Dr. J. W. Moore, Dr. Harvey, Dr. Woodhouse, and the hon. officers, was adopted by the Executive Committee at the last meeting of the Dublin Sanitary Association, and ordered to be forwarded to the newspapers for publication:—

"In accordance with your instructions your sub-committee have prepared this report on the wholesomeness or otherwise of the flesh of oxen affected with Epidemic Pleuro-pneumonia.

"I.—HISTORY AND DISTRIBUTION OF THE DISEASE.—Epidemic Pleuro-pneumonia of cattle is supposed to have been prevalent in Hesse in 1603 (Valentine). It was described in 1769 by Bourgelat as occurring in Franche Comte, where it was called "Murie." Before 1789 it was limited to Switzerland, Jura, Dauphine, Vosges, Piedmont, and Upper Silesia. It appeared in Champagne and Bourbonnais between 1789 and the end of the last century. It prevailed in Prussia in 1802, whence it spread through Northern Germany. Subsequent outbreaks occurred in Belgium (in 1827), Holland (1833), Great Britain (1841), Sweden (1847), Denmark (1848), Finland (1850), Cape of Good Hope (1864), the United States (1854), Australia (1858), and New Zealand (1864). It is also to be met with in Asiatic Turkey and some portions of Austria.

"II.—CHARACTERS OF THE DISEASE.—It is a specific contagious disease, and very fatal, usually prevailing as an epizoötic or enzoötic. Fleming says:—

"'The exact nature of the malady, like that of Cattle Plague, is not perfectly known. Beyond the characteristics above enumerated, and the fact that it is a specific disease peculiar to cattle, we have little precise information. Though usually considered an inflammatory disease, one or two

authorities are yet in doubt as to its being in any way connected with inflammation. Endeavours have been made to identify it with Rubeola and other human disorders, but with indifferent success, as there is little analogy between it and any special affection peculiar to mankind. In its essence it is a malignant fever, allied to the general eruptive diseases, generated by and generating during its course a specific virus which, when inoculated in a healthy animal, produces local and general disturbance, though very rarely the peculiar lung and pleural changes characteristic of the natural disease.'*

"The above statement is made by one of the highest, if not the highest, authorities on veterinary medicine at present living; and we believe his work is the most recent one of authority upon the question. It is evident from Mr. Fleming's statement that he considers the contagious Pleuro-pneumonia of cattle to be of the nature of a malignant fever. From all the information we have at our disposal, our opinion accords with that of Mr. Fleming upon this point. Mr. Fleming, however, appears to us to be decidedly in error in believing that there is little analogy between it (Pleuro-pneumonia) and any special affection peculiar to mankind, as there is a very analogous disease which occurs epidemically, and which has been designated 'Pythogenic Pneumonia' by two members of this committee in a paper published some years ago in the *Dublin Journal of Medical Science*. In a work published in 1876 by Dr. Sturges, who may be fairly considered as the highest authority on Pneumonia as it affects human beings, he refers to the epidemic character of certain forms of Pneumonia, and he says, 'Pneumonia thus occupies a middle place between the specific fevers, so called, and the local inflammations, and has something in common with both.'

"This remark is quite applicable to the Pleuro-pneumonia of cattle, and explains the doubt referred to by Mr. Fleming in the above quotation. The promoting causes of the disease are those which usually favour epidemics or epizoötics of any kind, and may be generally included under the terms 'bad hygienic conditions,' but no specific cause has yet been assigned for the disease. The general opinion of veterinarians appears to be that in this part of the world, at least, Pleuro-pneumonia does not arise except through contagion; but, as is the case with all similar epidemic affections, many outbreaks have occurred without the possibility of tracing the origin of the contagion.

"III.—It is not necessary here to refer in detail to the medical history of the disease, or to describe its symptoms, progress, and termination. The progress of the disease has usually been divided into two stages, and this classification has been apparently accepted by veterinarians and some pathologists. This appears to us to be a very rough method of describing the disease. It is clear to us that the disease has, like contagious febrile diseases among human beings,—1st. A stage of fermentation, lasting from the time of reception of the poison to the first symptoms of development of the disease. 2nd. A stage of invasion, when the animal sickens and the first febrile symptoms appear. This stage seems to have been imperfectly studied by veterinarians, and no doubt there is more difficulty in recognising the symptoms of 'all-overishness,' as it is popularly called, among cattle than among human beings. The third stage is that of the complete development of the disease, when the acute lung symptoms are developed; and the fourth stage that during which the animal recovers or dies, as the case may be. Should the disease follow an unfavourable course, which it most frequently

* "A Manual of Veterinary Sanitary Science and Police." London: Chapman and Hall, 1875.

does, the lungs become infiltrated with pus, and give rise (in addition) to the fever known scientifically as Pyæmia, or Suppurative Fever, or 'Septic Fever,' but popularly known as 'Hectic Fever.' This latter condition arises in human beings, who are said in popular language to die of 'consumption after inflammation of the lungs.' The conditions are completely analogous.

"IV.—With regard to the contagiousness of the disease, it is universally admitted that it is communicable from an infected to a healthy beast, and that the communication may take place either by the proximity of the animals, or by means of articles which have been in contact with sources of infection. The *materies morbi* seems to reside chiefly in the discharges from the infected lungs, but it is also present in the cutaneous emanations, and probably in the secretions, air passages, and excretions, as well as in the blood (Fleming).

"There is not at present sufficient evidence to prove that the blood or secretions of diseased animals can communicate the disease; but, arguing from analogy, such is by no means impossible or improbable. Thus we find that Measles in human beings is less contagious than Scarlatina, but Measles is easily communicable by inoculation with diseased products, while Scarlatina is scarcely—if at all—communicable in this manner.

"The Pleuro-pneumonia of cattle is certainly difficult of communication by inoculation. Fleming says—

"'Inoculation in various parts of the body with lung serum certainly gives rise to local and general disturbance, often of a very serious character; but it does not, as a rule, bring about those alterations in the thoracic cavity which are looked upon as constituting the essence of the disease.'

"From the foregoing summary of the history and nature of Epidemic Pleuro-pneumonia, and from the information in our possession, we believe we are justified in drawing the following conclusions:—

"1st. That Epidemic Pleuro-pneumonia of oxen is a contagious febrile affection.

"2nd. That the pulmonary inflammation, although the most important, is only one of the phenomena of the disease.

"3rd. That the virus of the disease, being of the nature of that met with in contagious zymotic diseases, and being capable of communication by inoculation of the body, pervades more or less all parts of the animal's body.

"V. With regard to the pathological anatomy of the affected animals, it is found that in the so-called 'first stage' of the disease the lungs are extensively congested and infiltrated with yellow serum. As the disease advances, solid lymphy deposits take place, the pleuræ present signs of inflammation and effusion, and the pericardium is also affected in some instances. The pleura lining the chest wall is affected, but the cellular tissue lying beneath it is 'rarely affected,' according to Fleming. The butchers often strip off the diseased pleura with a view of exposing only the healthy sub-pleural tissue, and thus passing off the carcase as healthy; but (says Fleming) 'the artifice is readily detected by an expert.'

"The flesh is dark and harsh in appearance, the fat frequently 'yellow-tinged,' and there is an absence of blood generally. This description of the flesh is very different from the characters of good meat given by Professor J. Emerson Reynolds in the 'Manual of Public Health for Ireland,' p. 195.

"In the suppurative stages of the disease large quantities of pus and dead lung tissue are found in the chest. 'The stomach contains dry food, and its lining membrane, as well as that of the intestines, may exhibit patches of congestion or extravasation' (Fleming).

"It thus appears that all parts of the animal are more or less affected, and this fact has an important bearing upon the main object of this report—

namely, the suitability for food of the flesh of animals affected with Pleuro-pneumonia. In considering this question, it is necessary to refer to the various ways in which animal food may become unwholesome. These are well classified by Mr. Gamgee in a valuable report made by him to the Medical Officer of the Privy Council, and published in the fifth report of that officer, March 31st, 1863, as follows :—

"'(*a*) Cadaveric venom.

"'(*b*) Animal poisons known from their effects in inducing specific diseases.

"'(*c*) Organic poisons due to putrefaction.

"'(*d*) Mineral and vegetable poisons absorbed into the system.

"'(*e*) Parasites.'

"The first, cadaveric venom, is that which produces such serious results in those who suffer from wounds received in the dissection of human bodies. Exactly similar results follow wounds received in the cutting up of meat. The second class of injurious principles is that with which we have to deal in the present instance ; and the question arises, Does the flesh of an animal affected with Pleuro-pneumonia produce injurious results? and is there any evidence of such results ? or is there evidence that it may be eaten without producing injurious effects? It is quite certain that large quantities of meat derived from animals affected with Pleuro-pneumonia have been consumed without any evil results being recorded. We could give many examples of such negative evidence. It must, however, be remembered that the absence of ill effects rests on hearsay evidence, and that but little inquiry of a nature that may be termed scientific has been made upon the point. Dr. Mapother makes the very appropriate remark,—

"'It must not be supposed, from the rarity of well-proved cases, that the eating of flesh of diseased animals is safe, for it must be remembered that the fearful effects of meat infected with trichinæ were only lately discovered.'

"We might add that sewer gas, dirty water, and ground water were never thought of as noxious until 'discovered' to be so. It must also be noted that it is only deaths from disease, not causes of disease, which appear in public returns, as there is no registration of sickness. Mr. Gamgee quotes a remarkable instance where injurious effects did follow the use of meat which was derived from cattle suffering from lung disease, and states that in an establishment containing 1520 convicts forty or fifty cases of boils and carbuncles appeared each month. This is a remarkable piece of evidence, as it has been stated by those who favour the consumption of the flesh of pleuro-pneumonic cattle, that the relation between the prevalence of boils and carbuncles was founded upon the error of confounding the 'Malignant Pustule' with Pleuro-pneumonia. It does not seem likely that Mr. Gamgee could make such a mistake. The fact that the mortality from Anthrax among men does not rise with the increased prevalence of Pleuro-pneumonia among cattle has been relied upon as an argument by the same persons. This argument, however, is quite fallacious, as Anthrax is not a very fatal disease, and, therefore, does not appreciably affect the death returns. What is more to the point is the fact that Anthrax and boils have prevailed to an unusual extent recently among men, at a time when Pleuro-pneumonia is particularly prevalent among cattle. In the absence of a registration of disease it is quite impossible to compare accurately the prevalence of Pleuro-pneumonia with that of any disease which does not materially affect the death returns. A careful examination of all available sources of information appears to show that the evidence of the fitness or unfitness of the flesh of pleuro-pneumonic cattle for human food is almost wholly of a negative character—the only positive evidence of injuriousness being that already quoted upon Mr. Gamgee's authority.

"Considering the question from a more general point of view, it is clear from the evidence before us that the flesh of pleuro-pneumonic cattle, although not presenting appearances specially characteristic of this particular disease, does present, except at the earlier stages, those characters known as febrile, or feverish flesh, when the meat loses its natural colour, odour, elasticity, and reaction. The flesh in the early stages of the disease is undistinguishable from that of healthy animals. It has not yet been ascertained exactly at what period of the disease the flesh begins to exhibit this febrile condition. As flesh with the febrile appearances would never be purchased by any one acquainted with the character of wholesome meat, and as such flesh is particularly prone to decomposition, we have no hesitation in condemning it as unfit for human food. We have, lastly, to consider the relations which 'organic poisons due to putrefaction' may have to the unwholesomeness of pleuro-pneumonic meat. It is admitted on all hands that 'feverish' meat is more prone to decomposition than that presenting healthy characters. It is well known that putrid meat is dangerous to health, and that although, when well cooked and partly disinfected by salt and other condiments, it may be eaten by persons habituated to it without ill effects, yet that it is prone to produce diarrhœa, vomiting, and other symptoms of gastro-intestinal irritation.

"Many deaths have been caused by the consumption of putrid meat, and many more serious illnesses have been caused thereby. Even the advocates of the consumption of pleuro-pneumonic flesh have admitted its proneness to decomposition, and suggested its 'sale at a reduced price,' and that, in order to diminish the risk of putrefaction, it is right 'to exercise greater care than ordinary in bleeding the animal.' Thus it is admitted that putrid meat is dangerous, and that meat from pleuro-pneumonic cattle is prone to become putrid, and, therefore, more likely to become dangerous than the flesh of healthy animals.

"We consider that, when flesh requires special precautions to prevent its becoming unwholesome, such flesh should not be permitted to be used for human food. The proposal to sell it at a reduced price means supplying it to the poor, needy, and hard-working, where its injurious effects are less likely to be heard of, and where the means—such as cooking and seasoning—likely to counteract its bad effects are less likely to be employed.

"With reference to the milk of diseased animals, there is no better evidence of its injurious or innoxious effects than there is with regard to the flesh. The most that can be said is that no one has complained; but the evidence is altogether of a hearsay character. We know that putrid milk is but too common, and we know that it produces dangerous diarrhœa in infants; and it may be that milk, like flesh of diseased animals, quickly becomes putrid, and thus dangerous.

"Our conclusions are as follows:—

"1. That Epidemic Pleuro-pneumonia is a specific contagious fever, and therefore affects the whole system of the animal, including its flesh and milk.

"2. That the flesh of animals affected with the disease, except in the earliest stages, is known to present unhealthy appearances.

"3. That the flesh is specially prone to become putrid, and therefore dangerous as an article of food.

"4. That it is not known with certainty at what stage of the disease the flesh first shows signs of infection.

"5. That there is no evidence of a scientific character to prove that the flesh of oxen affected with the disease has not produced injurious effects.

"6. That there is some evidence to show that the flesh when eaten has produced injurious results.

"7. That the proposal to sell the flesh at a reduced price, and to make it

less prone to putrefaction by careful bleeding, is, if carried out, calculated seriously to endanger the health of the consumers, especially the poor, and to leave a loophole for the sale of all kinds of diseased flesh.

"We are therefore of opinion that the flesh of animals which have suffered from Pleuro-pneumonia in any stage should not, under any circumstances, be permitted to be sold for human food."

STUBBS' "ANATOMY OF THE HORSE."

THE grandly engraved folio plates which illustrate the anatomy of the horse, and which, produced by Stubbs in the middle of the last century, are even now unequalled for fidelity in detail and correct drawing, derive much additional interest from a well-written notice of the artist which was published in the *Temple Bar* magazine for December last.

The veterinary profession, no less than painters and engravers, owe a large debt of gratitude to George Stubbs; for his "Anatomy of the Horse" gave a marked impetus to the study of this animal, from a surgical and pathological, no less than from an artistic, point of view. It is a monument of skill, patience, and talent; and those who are the fortunate possessors of a copy of the magnificent work (now becoming rare) will be inclined to place all the more value upon it when they learn something of the man who produced it—and whose highest fame will assuredly rest upon it—and the circumstances under which it saw the light.

Mr. Stubbs, it appears, was born at Liverpool on August 24th, 1724; his father was a "considerable currier and leather-dresser"; and at an early age the child evinced the genius of a painter. When scarcely eight years old, he began to study anatomy, a neighbouring doctor lending him bones and prepared subjects, from which he took drawings. The father, however, wished him to follow his own calling, and the lad appears to have done so until he was fifteen years of age, when events led to a departure from this course, and young Stubbs was engaged to an artist of repute in Liverpool. For some time he devoted himself to assisting in copying the pictures at Knowsley Hall, the Earl of Derby's seat, receiving instruction and one shilling a day for pocket money. A quarrel with Mr. Winstanley, the artist, however, brought this engagement to an end, and instead of copying paintings, Master Stubbs devoted himself to the study of nature, and remained at Liverpool until he was twenty years of age. Then he removed to Wigan, and afterwards to Leeds, where he worked at portrait painting.

From Leeds he went to York for the purpose of executing some commissions; and here he began a regular course of anatomy—dissecting human and animal subjects. Mr. Charles Atkinson, a surgeon of the town, procured him his first body for dissection; and such progress did the artist make, that he was soon employed in giving anatomical lectures privately to the pupils of the hospital. Here also he made his first essay in engraving—though under most unfavourable circumstances: a "man-midwife" of York being desirous of obtaining illustrations for a professional work, the body of a woman who had died in child-birth was "snatched" by Stubbs' pupils, and drawings having been made, they had to be engraved. This was quite a novel venture to the artist; but after much experimenting and borrowing of gravers the plates were completed, and pleased the doctor; for with all their imperfections they were anatomically correct, and gave a good idea of the parts intended to be represented. The work, by Dr. Burton, appeared in 1751. Stubbs removed to Hull, where he painted portraits and dissected assiduously, and then went to Italy in 1754; soon returning to Liverpool, he here achieved

what was apparently his first success—the portrait of a grey mare belonging to himself. In 1756, being then thirty-two years of age, he finally deserted Liverpool, and his first halting-place appears to have been in Lincolnshire, where Lady Nelthorpe had long before given him commissions for a series of portraits. Two years afterwards we find him at a farmhouse near Horkstow, in that county, energetically preparing for his great work on the "Anatomy of the Horse." The house appears to have been lonely, for we are told that he engaged it to avoid inconveniencing neighbours by his dissections. Here Stubbs worked for eighteen months, with one companion only—his niece, Miss Spencer, who was born near the painter's house in Liverpool, and from the first had shown great interest in his studies. The work thus laboriously carried through had long been present in Stubbs' mind ; and there are some interesting details of the manner in which it was conducted in the farmhouse by Horkstow. Stubbs tells us that he fixed a bar of iron in the ceiling of his *atelier*. It was suspended by a "teagle," and hooks of various size and length were fixed to it ; under this bar swung a plank, about eighteen inches wide, on which to rest the horse's feet. The body was suspended on the bar by the hooks, which Stubbs fixed in the ribs, and under the backbone, upon the further side of the animal. The horse was thus set in the attitude which the plates in his *magnum opus* represent ; and the carcase so remained for six or seven weeks, until no longer endurable. Like many other dissectors, Stubbs appears to have been indifferent to the odour of putridity, and even unconscious of it.

It would seem that Stubbs had not, at first, any notion of carrying out this great labour at his own expense and single-handed. The idea of it had been broached among the anatomical students at York, and the artist expected aid from some of them. But they all failed in their engagements, and Stubbs then resolved to bring his enterprise through without help from any one. Eighteen months of industry sufficed, and he took his drawings complete to London, where he hoped to find an engraver for them, in either 1758 or 1759.

But the celebrated engravers of the day declined this commission—not, apparently, without scorn. Many of the drawings represented entire figures, but others there were showing parts only—a nose, an ear, a leg—and for such work Mr. Grignion, Mr. Pond, and their fellows, had neither habit nor liking. This unanimous refusal obliged the artist to do his own engraving once more, and he set about the task with characteristic resolution. What great success he had is well known; but the publication was necessarily retarded, for Stubbs never broke into the time devoted to his regular occupation of painting, and his etchings were made early in the morning, or after hours. Often he worked late into the night. In about six or seven years they were complete, and the "Anatomy of the Horse" appeared in 1766. "More than any other thing, the book tended to throw him into horse painting, and to this he ascribes entirely his being a horse painter."

Sir Joshua Reynolds gave one of his earliest commissions in this line, and the Duke of Richmond gave him an important commission. He settled in London, was made a Royal Academician, adopted enamel painting, undertook in 1790 to paint a series of the most famous horses of the day, and towards the end of his active life returned to those anatomical studies by success in which he had gained his fame. Nothing he produced in this direction, however, at all equalled his dissections of the horse. These procured him real and lasting renown, and one of his most enthusiastic admirers was the celebrated Petrus Camper, the Dutch naturalist and surgeon. The *Medical Review* of 1767 says of the "Anatomy" : "This work not only reflects great honour on the author, but on the country in which it was produced. France may reap great credit from the Veterinarian School lately

established in that country ; * but what praise is not due to a private person who, at his own expense, and with the incredible labour and application of years, began, continued, and completed the admirable work before us ! The author himself dissected a great number of horses, for the sake of attaining that certainty and accuracy for which his engravings will ever be highly valued by the curious in comparative anatomy. His original drawings were all his own, and the plates were likewise engraved by his own hand. In short, we are at a loss whether most to admire the artist as a dissector or as a painter of animals."

The late Sir Edwin Landseer had the original drawings, which he valued highly, and consulted for his pictures.

Stubbs died in London on July 10th, 1806, and was buried in Marylebone Church. In his younger days his muscular strength was prodigious ; and we are told that he more than once carried a dead horse on his back up two or three flights of a narrow staircase to the dissecting room. He rose very early, ate little, and drank only water for the last forty years of his life.

Reviews.

A Text-Book of Veterinary Obstetrics : including the Diseases and Accidents incidental to Pregnancy and Parturition in the Domesticated Animals. By George Fleming, F.R.C.V.S., 2nd Life Guards. Parts III.—X. (*Second Notice.*)

In the November number of this Journal, I ventured to bring under the notice of the profession this book. Since that period, owing to the extraordinary industry and perseverance of its author, it has now nearly arrived at completion.

I hope the work has been read and studied ; for by this means only can its excellencies be recognised. The statement which I made on a former occasion—viz., that it would be a complete manual in all those divisions of anatomy, physiology, and pathology relating to the processes of generation, gestation, and parturition—is fully borne out ; and although the book is in advance of the profession in this country, and might, I think, have been judiciously curtailed, it is calculated to advance and promote the interests of veterinary science, as well as add to the reputation of its author.

In every one of its pages there is something to instruct, as well as assist, the veterinary surgeon in his important duties ; but to the veterinary student it is invaluable—containing, as it already does, a digest of all the opinions and practical suggestions of well-known writers on this subject, both at home and abroad.

The very great disadvantages under which the veterinary obstetrist labours, renders this work the more valuable. "Called upon too late, when the waters have escaped for a long period, and the neighbouring empiric has exhausted his science, aggravated a bad presentation, irritated the generative organs by manipulations, tractions, and violent means,"—then it is that the veterinary surgeon should exhibit his

* A reference to the establishment at Lyons of the first Veterinary School.

presence of mind, coolness, and fertility of resource; so as to take into consideration all the circumstances of the case, devise his method of procedure, and carry it out promptly.

For the young practitioner, just entering upon the duties of his profession, I would recommend Parts VII.—X. to his attentive consideration. He will there find many a precious hint—a copious and most valuable description of the various appliances by which unnatural presentations may be overcome, delivery effected, and diseases consequent on parturition prevented or cured.

During my professional career, I have witnessed a very large amount of cruelty carried on, and unnecessary pain inflicted, from the want of those appliances which are so judiciously suggested in this book, which will become more valued and esteemed as it becomes more extensively read.

Thos. Walton Mayer, F.R.C.V.S.,
Professor of Veterinary Medicine at the Royal Agricultural College, Cirencester.

On Horse-breaking. By Robert Moreton, M.R.C.V.S. London: Longmans, Green, and Co., 1877.

It gives us unfeigned pleasure at all times to notice new candidates for literary fame among the members of the veterinary profession in this country, and to encourage and aid them, if necessary, so far as lies in our power. There is a boundless field to be cultivated in this direction by the literary aspirant, and in no other could more direct and signal service to our science and ourselves, and indirectly to the public, be conferred. The accusation brought against us so frequently during the last three-quarters of a century, that we are, as a body, ignorant and illiterate, though it is, especially in recent years, undeserved, can only be refuted by evidence to the contrary. This evidence is gradually accumulating; and when the profession shall have determined that the veterinary graduate must not only have undergone a thoroughly scientific training at the schools, but must also have received such an amount of general education as will qualify him to practise his calling with advantage to himself and the community, and maintain his proper position in society, then such a degrading reproach will no longer be launched against us. We heartily welcome Mr. Moreton as the latest, and not the least valuable, of our recent accessions to the ranks of the once-despised "writing men." His little book on "Horse-breaking" does him great honour, and his colleagues no discredit. The veterinary surgeon should be, above all things, a horseman—not a mere rider of horses or stableman, but a student of horse-nature and temperament, as well as of horse-management. The author has evidently made a special study of horse-breaking, which must stand him in good stead on many occasions in the practice of his profession; while the instruction he has, by this study, been able to impart to others in clear and concise terms, will, we hesitate not to say, prove invaluable to those who desire to see young horses humanely and profitably tutored to toil for our benefit and pleasure. Mr. Moreton, in pointing out the errors which have, from

time immemorial, held sway in horse-breaking, and which have been productive of bad mouths, tempers, and dangerous habits,—due to the bad management and ignorance of the grooms and breakers who have given the colts their elementary lessons in utility and submission to the will and pleasures of man,—indicates the rational principles which should prevail in training young horses, either to saddle or harness, and particularly with regard to paces. There are chapters on riding young horses to hounds, the different kinds of horses for special work, and on the cruelty and folly of overworking horses which have not attained maturity. From experience and educated observation, Mr. Moreton has every claim to be recognised as one of the highest authorities on the subject which he has so admirably dealt with; and we have no hesitation whatever in recommending his book to members of the profession who are interested in horse-breaking—and who of them is not?—as well as to gentlemen and others who value well-trained horses, and insist on humanity in training them.

HORSE WARRANTY: ON THE PURCHASE AND SALE OF HORSES, WITH HINTS AS TO METHODS OF PROCEDURE IN CASES OF DISPUTE. By F. H. Lascelles, LL.B. London: Reeves and Turner, 1877.

Since the publication of Oliphant's book on the law of warranty, nothing has been done to render the legal aspect of horse-selling or horse-buying more clear and explicit, or in a compendious form to guide buyers or purchasers to a better knowledge of the risks and chances relating to the rectification of bad bargains. Mr. Lascelles has done good service in giving us a summary of the law with regard to horse warranty, in the cheap and modest little work before us. His pages, he confesses, "are not intended for a law book, nor will they supply the place of business habits, or turn a careless deal or bargain into a satisfactory one;" but he hopes "they will show those who propose to buy or sell a horse some of the rules and safeguards to be adopted to avoid litigation if possible, or to ensure success if litigation must take place." From a careful perusal of the book, we are satisfied that it will be found most useful to veterinary surgeons, as well as those who have to buy or dispose of horses: indeed, some portions of the work are particularly valuable, especially those pertaining to the more technical legal questions. It is a pity the writer did not obtain the aid of some competent veterinary authority, when drawing up the chapter on the diseases and ailments of horses which legally constitute unsoundness; as this is the least satisfactory portion of the otherwise excellent handbook. With regard to our profession the author writes: "The veterinary art has very much improved of late years. Veterinary surgeons now know what they are talking about; but still, in rural parts, the ignorance respecting the real diseases of animals is great." He then goes on to say that "Many farriers are natural healers of animals, just as many doctors are natural healers of men; from practice and long watching, and a natural aptitude for the work, they effect marvellous cures, and yet would be unable to pass the most simple examination on the anatomy of any part

of a horse." No doubt the author is alluding to non-qualified men who have not studied veterinary medicine, as the term farrier is not applicable to graduates of the Royal College of Veterinary Surgeons.

Proceedings of Societies.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCTOBER 3RD, 1877.

Present—Major-General Sir F. Fitzwygram, Bart., President, in the chair; Professors Brown and Walley; Messrs. Batt, Blakeway, Broad, Cartwright, Collins, Cox, Cuthbert, Dray, Fleming, Greaves, Harpley, Moon, Smith, P. Taylor, and the Secretary.

The notice was read convening the meeting.

The minutes of last meeting were read and confirmed.

Letters were received from Professor Williams, Mr. Withers, and Mr. Reynolds, regretting their inability to attend the meeting.

A letter was received from Mr. Talbot, in which he begged to tender his resignation as a member of Council of the Royal College of Veterinary Surgeons.

On the motion of Mr. DRAY, seconded by Mr. MOON, the resignation was received and accepted.

Letters were also received from the Secretary of the Royal College of Surgeons, the College of Physicians, the Secretary of the Royal Veterinary College, the Secretary of the Pharmaceutical Society, and from Prof. Walley, acknowledging the receipt of a copy of the Register with thanks.

A letter from Mr. Hughes, of Swansea, asking if a Mr. Long of that place was a member of the Royal College of Veterinary Surgeons.

The Secretary having stated that no such name was on the Register, he was instructed to send a "disclaimer" for insertion in the local newspaper in which the name appeared in the Directory.

Report of House Committee.

The Secretary read the following report:—

A meeting of the House Committee was held on September 14th, to receive and make arrangements for the reception of the presentations made by William Field, Esq., to the library and museum of the Royal College of Veterinary Surgeons.

The Committee recommended that an estimate be obtained of the cost of a book-case, to be fitted up at once in the Board-room, for the reception of the books, etc.; and that shelves be prepared in the museum for the specimens. Also that all necessary repairs be effected, and the oil paintings framed.

The SECRETARY was directed to write to Mr. Field and acknowledge the receipt of his valuable presentations.

The SECRETARY reported the presentation by William Field, Esq., of books, specimens, etc., to the library and museum of the College. The books consist of 298 vols., written by the most eminent authors on veterinary and medical science. Also a valuable portfolio of engraved anatomical plates and water-colour drawings of various morbid specimens.

Among the presentations may be mentioned a framed glass containing the pedigree of the thorough-bred horse, four oil-coloured drawings of morbid specimens, and drawings of the foot of the horse from "Stubbs' Anatomy."

To the museum are presented three sets of electric, galvanic and chemical

apparatus, eighty-three glass spirit jars containing a vast variety of morbid and other specimens.

A plaster cast of the fore-extremity of a horse (a case of Farcy). Also that of a head with a large tumour on the anterior part of the submaxillary jaw; and a plaster cast of enlarged spleen. Under glass shades are the injected thoracic and abdominal viscera of a dog. Also that of the leg and foot of a horse.

A human skeleton, and the skeletons of several other animals and birds contained in glass cases. The preserved heads of a buffalo and ibex, and the antlers of a deer.

There are several ancient horses' bits, one a silver-mounted cheek bit, and a pair of ancient spurs; 17 sets of cupping apparatus, and 3 spirit lamps.

Also a vast variety of fractured and other morbid bones; 57 specimens of calculi; cases of modelled horse mouths and horseshoes, and a large number of specimens of ancient and modern horseshoes.

Mr. HARPLEY, on behalf of Mr. Field, said that that gentleman had very great pleasure in presenting the specimens of morbid disease and also the library, in which would be found some works that were almost unique. He was sure that the Council would do Mr. Field the honour of accepting them, and he hoped that it would be an incentive to others to make similar presentations.

Mr. FLEMING, in seconding the motion, said he had examined some of the specimens in the museum which belonged to Mr. Field, and he thought when the members had had time to look over them, they would entirely agree with him, that Mr. Field's gift was one of the best the College had ever received. Many of the books were of very great value: in fact, he could testify that some of them were not to be found in the Library of the British Museum. They were in first-rate preservation, the plates were very fine, and the pathological specimens in the museum were, many of them, entirely unique. He thought that the Royal College of Veterinary Surgeons should adopt some means, beyond the ordinary method, of testifying to Mr. Field the estimation in which they held his gift to the profession.

The PRESIDENT moved that a letter containing a vote of thanks be drawn up by Mr. Dray, Mr. Harpley, and Mr. Fleming. The motion was agreed to.

The SECRETARY announced the presentation by Mr. Fleming of Part 10 of his work on "Veterinary Obstetrics."

On the motion of Mr. Dray, seconded by Mr. P. Taylor, a vote of thanks was awarded to Mr. Fleming for his presentation.

The SECRETARY also intimated that Mr. Graham Mitchell, of Australia, had presented a work on the Cumberland Disease in sheep, and that specimens of the centipede, and also a Filaria oculi taken from the eye of a horse in India, had been presented by Mr. Merrick of the Royal Artillery.

On the motion of Mr. Fleming, seconded by Mr. Broad, a vote of thanks was passed to the donors.

A letter dated 21st July, from Dr. Dunsmure, was read, in which he stated that Dr. Dickson was desirous that Dr. Balfour should be appointed Examiner in Botany in Edinburgh and he in Glasgow, because, if there were several meetings of the Board in July in Edinburgh, he would find it inconvenient to attend them for fear of neglecting his class.

The PRESIDENT said he was averse to altering the composition of the Examination Board. Such a course would be contrary to the policy lately adopted by the Board, and, unless there was a strong necessity for any alteration, it should not be made.

Mr. TAYLOR having signified his concurrence in the views expressed by the President, the matter was allowed to drop.

Scotch Examinations.

At a meeting of the Scotch Section of the Court of Examiners held in Edinburgh on July 18th, 19th, and 20th, 42 students passed and 13 were rejected.

The Fitzwygram Prizes.

The report of the Fitzygram Competition having already appeared in the Veterinary Journals, the Secretary announced that Mr. Richard Glover, of the London Veterinary College, obtained the first prize of £50, and that Mr. Laurence Tipper, also of the same College, obtained the second prize. Mr. Glover expressed his regret at having been the cause of so much extra trouble, and was grateful for the consideration he received at the hands of the donor and the Examiners.

The SECRETARY stated that Prof. McCall was desirous of being informed as to the dates for fixing the Scotch Examinations, in order to comply with the new rules. A letter had also been received from Prof. Walley, wishing to be informed if rejected students under the new rules in July would be eligible to present themselves at Christmas. Both letters had been laid before the Council.

The PRESIDENT said that a motion bearing on the subject would be made at a subsequent stage of the proceedings.

The SECRETARY stated that there were eight candidates on the list for the Fellowship Degree examination, and that arrangements should be made not only for that, but also for the examinations at Christmas.

The PRESIDENT said that this matter also would be considered afterwards.

The SECRETARY stated that the Library Committee had to report that they had looked over the books, and found that there were several volumes that required to be repaired. An estimate had been obtained of the cost. One process was that of binding in half-calf, and the other that of roan. The cost would be £4 9*s.* in the former, and £3 9*s.* 6*d.* in the latter. The Committee recommended that, as there were a great many valuable books, those that required to be bound should be bound in half-calf, amounting to £4 9*s.*, with 6*s.* additional for repair to the portfolio.

Mr. DRAY moved that the books be bound in half-calf.

Mr. FLEMING seconded the motion, which was carried.

Mr. DRAY further moved that a catalogue be printed, and that each member of Council be furnished with a copy.

Mr. TAYLOR seconded the motion, which was also carried.

Some conversation then took place as to the framing and glazing of some oil paintings—when it was ultimately decided that the paintings be forthwith hung up, and that the question of framing should stand over.

The obituary notice was read.

The REGISTRAR reported that 122 Registers had been sold, and that Mr. Adlard had written to say that the estimate for reprinting 100 copies of Register would be £5 18*s.* ; and for £250, £9 14*s.*, exclusive of alterations.

Finance Committee.

The report stated that the vouchers and receipts for payments during the preceding quarter had been examined and found correct. The quarterly balance-sheet showed that the present liabilities amounted to £173 12*s.* 9*d.*, which the Committee recommended should be discharged.

There being some slight discrepancy in the accounts,

The PRESIDENT moved that they be referred to the Finance Committee, and brought forward at the next meeting.

Mr. DRAY seconded the motion, which was carried.

Cheques were ordered to be drawn for the current expenses.

College Fund.

The SECRETARY announced the receipt of £26 5*s.* from Messrs. P. Taylor and Son of Manchester.

In reply to the President,

The SECRETARY stated that £1390 17*s.* 1*d.* was invested in consols, and that there was at the bankers' £92 8*s.* 4*d.*, making a total of £1483 5*s.* 5*d.*, which, together with the £26 5*s* just received, amounted to £1509 10*s.* 5*d.*

The PRESIDENT moved, and Mr. DRAY seconded, that the whole of the balance be invested.

The motion was carried.

The Secretary's Salary.

Mr. DRAY, in calling attention to the reduction in the Secretary's salary, said he was only actuated by one motive, and that was a sense of justice. Mr. Coates had been Secretary for about sixteen years, and for many years he only received £100 per annum. A short time ago the Council thought it was too insignificant a sum, and raised the salary to £150 per annum, which he was well deserving of, because he considered that Mr. Coates had performed his duties in a very honourable and straightforward manner. In consequence, however, of the expenditure exceeding the receipts, the Finance Committee, under pressure, had reduced his salary by £20. At the last meeting but one this reduction was considered unfair, and it was altered to £10, which he proposed should be rescinded, and that the salary should continue to be £150 per annum. In this instance he considered that the rule of reward for long service and good conduct had been departed from. He also called attention to the fact that Mr. Coates also performed the duties of Registrar, which were distinct from those of Secretary, and for which he received no remuneration. He hoped that at some future time, when the funds of the Council would permit of it, the Finance Committee would suggest that, instead of the Secretary's salary being diminished, it should be augmented.

Mr. CUTHBERT, in seconding the motion, endorsed the opinions expressed by Mr. Dray.

Mr. GREAVES also bore testimony to the very able and satisfactory manner in which Mr. Coates had performed his duties. He was sure that the Council would be very much pleased to add to the salary if their financial position would admit of it; but he thought it was satisfactorily shown that at the time the alteration was made the Council could not afford to pay the amount, and it was in consequence of a sort of necessity that they were obliged to diminish it. If the finances of the Council were now such as could admit of it, he would have much pleasure in supporting the motion.

The PRESIDENT, after referring to the circumstances under which the reduction was made, said that the Council would no doubt be glad to assent to the reinstatement of Mr. Coates's salary; but he thought, in face of the report of the Committee, it would be unwise to make the increase until the end of the year; and if at that time the funds would admit of it, Mr. Coates's salary might not only be reinstated, but he might also be repaid what he had lost during the year. He had little doubt that, from the result of the examinations, the Council would at the end of the year be in a better financial position than they had hitherto been, and he therefore moved that the question be deferred to the end of the financial year.

Mr. HARPLEY, in seconding the motion, concurred in the observations made by the President, remarking that it would be impolitic in the Council to carry Mr. Dray's motion.

After some further conversation,

Mr. COATES said he acquiesced in the suggestion of the President. There-

upon Mr. Dray withdrew his motion, and the amendment proposed by the President was declared carried.

Alteration of Bye-law 50.

Mr. TAYLOR moved the alteration of the above bye-law respecting the election of Fellows. At present it ran as follows :—

"50. Each candidate other than a professor or ex-professor at a school affiliated with the Royal College of Veterinary Surgeons, will be required to produce a certificate of graduation in arts at a university to be recognised for this purpose by the Council, or a certificate of liberal education after an examination by the College of Preceptors under the direction and supervision of the Council."

As a practical veterinary surgeon, he felt that this bye-law had produced discord and dissension in the ranks of the profession, inasmuch as it did not carry an equal amount of justice to each one of its members. He did not see why the professors should be exempted from passing a preliminary examination if they had not already done so. They were looked up to as learned men ; but they ought to feel it a pleasure to pass a preliminary examination, if it was to be made the *sine quâ non* in the case of a practical man before he was examined for his degree of Fellowship. In his opinion this was unnecessary and unjust, and would injure the finances of the Fellowship degrees. He thought that at some future time a higher scale of examination should be adopted, and that it would be sufficient if the examiners would admit any person who came before them if he was recommended by three of his Fellows as regards his status in the profession. He therefore had great pleasure in asking the Council to expunge the bye-law, and to substitute one as follows :—

"A candidate for the degree of Fellow shall produce a good and satisfactory certificate signed by three Fellows as to his status in the profession, and as to his having been in practice not less than five years."

Mr. GREAVES, in seconding the motion, thought it would be more satisfactory to the profession at large if there were no such distinctive mark made between the general practitioner and the army veterinary surgeon, or rather the professors. It was fully admitted that the professors were educated men ; but it should also be admitted that many of the general practitioners were educated men. Let it be understood that a man who had his diploma and was recommended by three Fellows, had a guarantee that he was an excellent man and fit to become a Fellow.

Mr. FLEMING thought the question an important one. There had been no complaints on the part of the profession with regard to the bye-law, and he thought that, if it were abolished, one-half of the value of the Fellowship degree would be done away with. It should be borne in mind that the admission to the schools had hitherto been of a very unsatisfactory character. There had been no educational test until quite recently, and the present one was unsuitable to the age, and was rather a disgrace than otherwise. Until the Royal College or the schools themselves imposed a higher test than they did at present upon the intending student, it would be most unwise and injudicious to abolish the bye-law. A Fellow of the Royal College of Veterinary Surgeons should be a man of education, and he was sorry to say that there had not been hitherto any report as to the educational standard demanded from the students, and the public had no proof that they were an educated body. He thought the abolition of the bye-law, as things at present stood, would be fatal to the Fellowship degree. He therefore proposed, as an amendment, that the bye-law stand until such time as the Royal College took up the subject of preliminary education, or until the schools themselves imposed upon the

intending student such an examination as would convince the public that, if these men were made Fellows, they were educated as gentlemen.

Mr. HARPLEY, in seconding the amendment, said the bye-law was only taking effect, and it would be better to give it a longer trial.

Professor WALLEY thought that a rider should be added to Mr. Taylor's motion, to the effect that the examiners should have the power of rejecting a candidate whose papers showed that he was not up to the mark.

After some further conversation the amendment and motion were put to the meeting, when it was found that twelve voted for the amendment and four for the motion.

The amendment was therefore declared carried.

Mr. BLAKEWAY asked leave to postpone the motion of which he had given notice at the last meeting, to some future day.

The PRESIDENT said he intended to move to add to Bye-law 50, after the words "Veterinary Surgeon," "Any candidate other than a professor or ex-professor at a school affiliated with the Royal College of Veterinary Surgeons, will be required to produce a certificate of graduation in arts at a university to be recognised by this Council for this purpose," etc., "or gentlemen who have passed the Civil Service or Army Examination." He believed the object in making Bye-law 50 was wholly and entirely to secure that the person who obtained the honorary degree of Fellow should possess a liberal education. He believed the army examination had been for the last twenty years sufficiently stringent to insure a moderate amount of liberal education. Officers of the army had always possessed the degree of social status and liberal education which he thought might fairly entitle them to be Fellows of the Royal College of Veterinary Surgeons, and therefore he moved the addition of the words proposed.

Mr. BROAD seconded the motion.

Mr. COLLINS proposed as an amendment that army veterinary surgeons also should pass the preliminary examination in the same way as the civil practitioners, before presenting themselves for Fellowship examination, and that there should be no distinction between them.

Mr. TAYLOR seconded the motion.

Mr. FLEMING understood the President's motion to apply only to officers in the army, and who were not veterinary surgeons when they passed their examination. He was quite sure that those army veterinary surgeons who were desirous of obtaining the Fellowship degree would feel that they were being passed to it under false colours if they did not submit to the same ordeal as their brethren in civil life.

Mr. COLLINS said that the officers mentioned by Mr. Fleming had already passed a severe examination as to their general education, which the veterinary students did not.

The PRESIDENT said he was quite willing to take it as meaning the ordinary army examination. The motion would run as follows: "or gentlemen who have passed the Civil Service or the Army Examination held by the Civil Service Commissioners." This would not include veterinary surgeons.

The motion was put and carried.

In answer to Dr. Dunsmure's letter, previously referred to,

The Secretary was instructed to say that the Council thought it undesirable that the members of the Court of Examiners should be different at different places. It was opposed to the policy of the Council, who of late years had incurred very considerable expense in partially amalgamating the Examining Boards in England and Scotland.

Prof. McCall having written asking the Council to fix a time for the winter examination,

The PRESIDENT thought the best thing would be for the Secretary to write to the other two Scotch schools and ask them what time would be most convenient.

Candidates for the Fellowship Examination at Christmas.

The PRESIDENT said it would be most convenient to have the examinations after the usual examination, and therefore he should put the question whether the Council was willing to give the candidates for Fellowship an examination as soon as convenient after the usual winter examination.

This having been acceded to, the Secretary was instructed to write and say that there would be an examination.

The PRESIDENT gave notice that he would move the suspension of Bye-laws 32 and 33 for a period of three years, in order to enable gentlemen who have held the Highland and Agricultural Society's certificates for three years, to obtain the diploma of the Royal College of Veterinary Surgeons by passing the second and third examination at one and the same time on payment of full fees; and that gentlemen who have obtained their certificate more recently, but prior to December 31st, 1877, shall be required to pass all three examinations at one and the same time, on payment of full fees.

The Council then adjourned.

Jurisprudence.

A HORSE WARRANTY CASE.

AT the York County Court, recently, before Mr. E. R. Turner, judge, Mr. Chas. Hornsey, land surveyor, Railway Street, York, brought an action against Mr. Handley Taylor, farmer, Bog Hall farm, Dringhouses, to recover £19 13*s.* 3*d.*, damages for breach of a warranty of the soundness of a brown horse sold to him by defendant in March last. Mr. R. Dale appeared for the plaintiff, and Mr. A. Watson was for the defence.

Mr. Dale, in stating the case, said that on Tuesday, the 13th March, Mr. Taylor gave Mr. Hornsey the privilege of riding the horse in question to meet the York and Ainsty hounds, and as he was much pleased with it, he entered into some conversation with Mr. Taylor with a view to its purchase. Mr. Taylor asked £80 as the price, and on the plaintiff inquiring if the horse was sound, he replied that it was as sound as any horse in England. Mr. Hornsey observed the animal to blow heavily, which, however, went off in its being ridden, and on calling Mr. Taylor's attention to it, he repeated his former assertion, that the horse was as sound as any horse in England. No bargain was made on that day; but on the 27th of March Mr. Hornsey was again in the hunting field, when the horse was being ridden by Mr. Morgan, the late kennel huntsman of the York and Ainsty hunt. Some further conversation took place between Mr. Hornsey and Mr. Taylor, the former offering £75 for the animal, and ultimately agreeing to buy it for £80—the purchase money being paid to defendant on the following Saturday, he returning 10*s.* Mr. Hornsey not requiring the horse just then, it was arranged that Mr. Taylor should keep it for some time; but finding that he had to go to Melbourne to meet the hunt, he sent word to the defendant to deliver it on the following Monday, and on that day the horse was taken to the Pack Horse, Micklegate, and handed over to Mr. Hornsey. While at the public-house, the groom called Mr. Hornsey's attention to an enlargement of the horse's fore-knee, but of this he thought little or nothing, and started for

Melbourne. On arriving at Grimstone he observed that the horse stepped rather short, and that it showed signs of lameness, but he hunted it during the day, and returned home with it in the evening. On the following day he observed further signs of lameness, and therefore called in Mr. Bowman, V.S. He examined the horse, and found the near fore-foot bruised and cracked to the heel, and that the sensitive part was separated from the insensitive portion, these injuries causing lameness. It appeared that on March 27th, a few days previous, the horse had an overreach in the hunting field, which it was maintained was the cause of the cracked heel, and of which Mr. Taylor had failed to inform Mr. Hornsey. On ascertaining that the horse was lame, he communicated with the defendant, stating that he regretted to have to return it, but that he must do so for reasons stated by Mr. Bowman. The defendant took the horse back to Mr. Hornsey's premises in Holgate, and as he vouchsafed no answer to Mr. Hornsey, the horse was sold by Mr. T. Walker. It realised on the sale £65 2*s.*, which, together with the expenses incurred, left a deficiency on the amount of purchase money of the sum now claimed.

The plaintiff, on being examined, confirmed the above statement, adding that on the 27th March he saw the horse fall with Mr. Morgan in the hunting field, but when he purchased it he did not know that it had sustained any injury. In answer to Mr. Watson, plaintiff stated that he had frequently seen the horse in the hunting field, and he liked it very well. When he went to Melbourne to the hunt, they had about six miles' hard chasing, and he rode the horse during the day about twenty-five or twenty-six miles.

Richard Cooper, landlord of the Pack Horse, and Charles Skeller, ostler, spoke to observing a little enlargement of the horse's right fore-knee on its being brought to the stable.

Mr. Goddard Morgan, late kennel huntsman of the York and Ainsty hunt, stated that while riding the horse one day in March, in the hunting field, it fell with him from an overreach, and he afterwards observed a crack between the hair and hoof, near the coronet. He informed Mr. Taylor of the occurrence. In answer to Mr. Watson, witness said the horse went as well after the overreach as before.

Mr. John Bowman, Wheldrake, a veterinary surgeon of twenty-five years' standing, said that, on examining the horse, he found it lame in the near fore-foot from an injury. The insensible horn was torn away from the sensitive part of the foot. He also observed a crack from the top of the hoof down to the heel, about half an inch in length. The horse was very lame, and while standing in the stable it favoured its foot. In his opinion the lameness was in the foot, and the injury was such as might be caused by an overreach. There was a slight enlargement of the knee, but he considered this was of little consequence. He believed there was no unsoundness in the foot, but that the lameness was only temporary.

Mr. Watson, for the defence, submitted that there was no warranty whatever, and that if there was a warranty given, the horse was perfectly sound. It appeared that on the 13th March the parties had some casual conversation about the horse, but no bargain was made, the price being simply mentioned. From that time until the 27th March the horse was hunted regularly by Mr. Morgan, and on the day when the purchase was concluded, not a single word was said as to a warranty. Even supposing that on the 13th March the defendant had said in a casual way that the horse was sound—which he denied—there was no evidence to show that he reiterated it on the 27th, when the final bargain took place. Mr. Watson further contended that if there was any lameness it had been caused through the day's hunting at Melbourne.

The defendant, in examination, said that he was now the owner of the horse, having repurchased it. He at first asked the plaintiff £100 for it, and when he purchased it for £80 he never warranted it. When he delivered it at the Pack Horse there was no swelling at the knee. In answer to Mr. Dale, defendant said he believed the horse was perfectly sound. He was told by Morgan that he thought the horse had had an overreach, but he found no indication of it, there being only a little bit of skin off above the hoof. He had offered to take the horse back if a V.S. from a distance pronounced the horse to be lame from anything but a bang on the knee, which he thought Mr. Hornsey must have given him while hunting. In his opinion the swelling of the knee after the day's hunting at Melbourne was caused by a bang.

G. Hampshire, groom in the employment of Mr. Taylor, said that eight or ten weeks before the plaintiff purchased the horse it had a prick in the side of the knee, but it recovered in three days, and was then perfectly sound. Replying to Mr. Dale, witness said that on being told by Mr. Morgan that the horse had had an overreach, he and his master (the defendant) examined it, and he found a crack about as big as a thumb nail. The defendant pared off the loose shell, and ordered him to wash and keep the hoof clean, and he did so until it was delivered to the plaintiff.

Benjamin Barber, master blacksmith, Askham Bryan, and Benjamin Buckle, who is in his employment, and who had regularly shod the animal, stated that up to the 15th March, when it was last shod, it had no defects on the hoofs, and they noticed no swelling about the knees.

Mr. Geo. Hardy, V.S., said that he had examined the horse on the 14th April, and found no disease whatever on the near fore-foot, and nothing which, in his opinion, would cause it to go lame. He found an enlarged knee, the result of a bang, and there seemed to be a large amount of extravasated blood under the skin. There was a small crack on the hoof, which did not penetrate to the sensible portion as far as he could see, but he did not probe it. In his opinion the lameness proceeded from the knee and nothing else.

Mr. F. J. Day, York, gave similar evidence, and also gave it as his opinion that the lameness proceeded from the knee, the enlargement of which he thought was caused by a bang against a stake. There was a superficial bruise on the hoof of perhaps six or eight weeks' standing, and although this might cause temporary lameness at the time, it would recover in two or three days.

Mr. J. Cuthbert, V.S., Leeds, gave corroborative evidence; and this was the whole of the evidence.

His Honour then said he thought he was bound to give credence to the plaintiff's story as to the warranty, and it seemed to him that a sufficient warranty had been given. It had also been proved to his satisfaction, by the evidence of the two men from the Pack Horse, that the horse when brought there had a swelling at the knee, and Mr. Hornsey did not ride the horse above a mile and a half on the way to Melbourne before he found it going lame. He therefore considered that the warranty had been broken, and he should give a verdict for the plaintiff for the amount claimed, with costs.

THE DISINFECTING OF CATTLE TRUCKS.—IMPORTANT ACTION.

ON October 11th, at the Manchester County Court, before Mr. J. A. Russell, Q.C., Judge, the case of Moon *v.* Lancashire and Yorkshire Railway Company was heard.

This was an action brought to recover damages which were laid at £30, for injury sustained by some sheep in transit from Wakefield to Salford, owing, as it was alleged, to the negligence of the defendants' servants. Mr. L. Lewis was counsel for the plaintiff, and Mr. Jordan for the defendants.

The plaintiff, Mr. Joseph Moon, is a cattle dealer, residing in Eccles New Road, Salford; and on the 9th of May last he purchased 282 sheep at Wakefield cattle market. They were placed on trucks on the defendants' railway, about half-past three o'clock the same afternoon, and were then in a sound condition; but when they arrived at the Windsor Bridge cattle siding, Salford, between ten and eleven at night, the drover in charge of them found that many of the animals were severely injured. It appeared that the trucks in which the sheep were carried had been newly disinfected with a composition of lime and chloride of lime; and it was alleged by the plaintiff that the men who disinfected the trucks, instead of throwing the undissolved lime away, placed it on the floor of the truck. The weather was very wet, and the consequence was that the lime, not being properly slacked, got into the clefts of the hoofs of the sheep, so that their feet were severely burned. On the 16th of the same month a second consignment of sheep, also from Wakefield, suffered in a similar way, and the plaintiff was obliged to dispose of the animals at a loss.

The plaintiff and a number of witnesses were called, who gave evidence as to the loading of the sheep and the condition in which they were when they arrived at Salford. On each occasion when the sheep were conveyed the weather was wet.

For the defence, Mr. Jordan contended that the defendants were not liable. They were compelled, by an order in Council, to disinfect the trucks each time that cattle were placed in them, and they had complied with that order in the proper way; but what they said was that on the night when the plaintiff's sheep were carried it rained so heavily that the lime, which would otherwise have remained upon the sides of the trucks, was washed down, and so got into the hoofs of the sheep.

Two witnesses gave evidence as to the disinfecting of the trucks; and one of them, a man named Hulbert, said that he saw the lime washed down to the bottom of the trucks before the sheep were placed in them. He did not sweep the trucks out, but if the plaintiff's drover had complained, he should have changed the trucks. There was no more lime upon the floors than usual.

The Judge said the evidence of the witness Hulbert was conclusive of the fact that the injury might have been prevented, and that the trucks might have been swept out before the sheep were placed in them. That being so, he held that the trucks were in an improper state, and that the defendants were therefore liable. They would also have been liable as common carriers, because the sheep were delivered to them in a sound condition, and were unloaded in an unsound condition. Judgment was given for the plaintiff for the amount claimed.

Obituary.

WE have received information of the death of Wilhelm Probstmayer, Director of the Central Veterinary School at Munich, and Government Veterinary Surgeon of Bavaria. This regretable event occurred on August 23rd, from a malignant disease of the tongue, which caused excruciating pain for a long time, and necessitated several severe operations. Probstmayer was born at Augsburg in 1823, his father being a member of the veterinary profession, and for some time one of the stud directors at Zweibrücken. Receiving his

general education at the St. Stephan Gymnasium, he subsequently studied veterinary medicine at the Munich school. Practising his profession for a short time at Homburg, he in 1846 entered the army, and saw active service during the Schleswig-Holstein campaign. Passing through the several grades of veterinary surgeon, he was finally appointed to the First Cuirassier regiment in Munich. During his army service he made an attentive study of pathological anatomy, and in 1863 published his "Etymologisches Wörterbuch der Veterinärmedicin." In 1867, he was made Director of the Munich Veterinary School, and in 1873 Government Veterinary Surgeon to the Minister of the Interior—both of which positions he held to the last, and with benefit to veterinary science and his country. His eminent services were acknowledged in various ways, but particularly in being decorated with the first-class Chevalier Cross of the Order of St. Michael, also the first class of Zähringer-Löwen Order. He was elected a correspondent of the Dorpat Veterinary Institute, and an Honorary Fellow of the St. Petersburg Veterinary Society, as well as a member of other learned bodies, and particularly of societies for the prevention of cruelty to animals.

Notes and News.

HYDROPHOBIA IN ENGLAND.—Hydrophobia caused the death of 47 persons during 1875; and the largest number of cases (16) occurred in Lancashire, while there were none at all in Kent. We have repeatedly drawn attention to the increase of Rabies among animals, and the corresponding prevalence of Hydrophobia in mankind in this country. The *Lancet* lays stress on this in the following remarks:—"It is an undoubted fact that Hydrophobia has been increasingly fatal in England in recent years. The annual death-rate from this disease to a million living, which, according to the Registrar-General's Reports, did not exceed 0·3 in the five years 1860-65, rose successively to 0·9 and 1·8 in the two succeeding quinquennials, and further increased to 2·0 in 1875, which is the latest year for which the returns are complete. In London six deaths from Hydrophobia were registered both in 1875 and 1876; and in the first twenty-nine weeks of this year, ending on Saturday, July 21st, nine had already been recorded, of which two (in St. Bartholomew's and Guy's Hospitals) occurred during the week ending July 21st. In New York a most stringent code of municipal regulations came into operation on the 1st of July, with a view to put a strong check upon the number of ownerless dogs, and thus to reduce to a minimum the chance of Hydrophobia mortality. Under these regulations any dog appearing in a public thoroughfare without a muzzle, and without a collar bearing the number of its license, is ordered to be seized and pounded, and not released without the payment of a fine; if such fine is not paid within a few days, the dog is to be destroyed. In many of our provincial towns regulations as to the efficient muzzling of dogs are both issued and enforced, while in London no attempts are made in this direction, and although a license is nominally necessary, the number of apparently ownerless dogs constantly to be seen in the streets suggests the improbability of their all being licensed. It seems to be nobody's business in London to protect us from the nuisance of vagrant dogs and the attendant danger from Hydrophobia."

VITALITY OF SEEDS.—The mines of Laurium, which gave rise recently to such lively diplomatic discussion, are generally known to be largely encumbered with scoriæ, proceeding from the working of the ancient Greeks, but containing enough of silon to repay extraction by the improved modern

methods. Professor Hendrich relates that under these scoriæ, for at least 1500 years, has slept the seed of a poppy of the genus *Glaucium.* After the refuse had been removed to the furnace, from the whole space which they had covered have sprung up and flowered the pretty yellow corollas of this flower, which was unknown to modern science, but described by Pliny and Dioscorides. This flower has disappeared for fifteen to twenty centuries, and its reproduction at this interval is a fact parallel to the fertility of the famous "mummy wheat."

AGRICULTURE IN AUSTRALASIA.—At the beginning of last year the number of sheep in Australasia was estimated at 63,845,719, or more than twice as many as in the mother country. Of these 24,000,000 were in New South Wales, 11,000,000 in Victoria, 6,000,000 in South Australia, 7,000,000 in Queensland, and 11,000,000 in New Zealand. The number of oxen at the same time was 6,884,525, nearly half of which belonged to New South Wales. The number of horses had increased to 935,252, of which New South Wales possessed one-third. The swine were estimated at 673,729, and were pretty equally distributed throughout the various provinces. The extent of land under cultivation in Australia was 3,480,294 acres, of which 451,138 were in New South Wales, 1,126,831 in Victoria, 1,444,586 in South Australia, 77,347 in Queensland, 332,824 in Tasmania, and 47,571 in Western Australia. Besides this, New Zealand possesses 2,377,402 acres of land agriculturally utilized, of which more than 1,770,000 acres are used as pasture.

EVIL EFFECTS OF DISEASED MEAT.—A very melancholy case of wholesale poisoning from the consumption of diseased meat is reported from Wurzen, a small town in Saxony. A local farmer, finding one of his recently-calved cows to be suffering from Puerperal Fever (not Puerperal Apoplexy), with accompanying abscesses and ulcers, beyond all hope of recovery, secured the services of two neighbouring butchers to slaughter the beast and dress the carcase, after which the trio managed to dispose of the meat, partly in the form of sausages, and partly as joints. Among those who partook of it no less than 206 cases of illness have occurred, and in seven instances such illness has terminated fatally. The symptoms observed during life were analogous to those of Asiatic Cholera, and in the fatal cases decomposition of the bodies rapidly set in. In six of the fatal cases a *post-mortem* examination was made. There were found peculiar extravasations of blood, as well as inflammation of the mucous membrane of the stomach and intestines, with tumefaction of the glands of the small intestines. In the patients who recovered, convalescence was slow, and attended with serious relapses. Inquiries instituted by the authorities clearly showed the origin of the outbreak; and the heartless culprits, whose miserable cupidity led to such sad results, were committed to prison, to await their trial. The owner of the diseased beast was eventually fined 18,000 marks (£900), and the two butchers who dressed and sold the carcase had each to pay 6000 marks.

NEW DISEASES.—Speaking of "the humbler Post-Office officials," and quoting from the Postmaster-General's Report for 1874, a writer in one of the magazines says: "The Postmaster, after expressing a hope that 'compulsory education' may bring about an improvement, gives us some specimens of written replies to customary questions received from candidates for the humbler appointments of the Post Office. They were required to answer concerning the diseases prevalent in their families. 1. 'Father had sunstroke, and I caught it of him.' 2. 'Sister died of compulsion.' 3. 'My little brother died of some funny name.' 4. 'A great white cat drawed my sister's breath, and she died of it.' 5. 'Aperplexity.' 6. 'I caught Tiber fever in the Hackney Road.' 7. 'Burralger in the head.' 8. 'Shortness of breath.' 9. 'Indigestion of the lungs.' 10. 'Sister was consumpted, but now she's

quite well again.' We fancy we have met with replies quite as comical among those who have had to do with animals.

KILLING ANIMALS BY DYNAMITE.—According to *Berrow's Worcester Journal*, Mr. Thomas Johnson, of Dudley, has recently made experiments with dynamite for the purpose of killing cattle. A small quantity of the explosive, the size of a thimble, was placed on the foreheads of several bulls and horses, and exploded in the ordinary way, with a short piece of safety fuse and detonator. The results were highly satisfactory, as the cattle were instantly killed by the explosion, and only required bleeding. Last week experiments were made on a more scientific scale at Mr. Bruton's, Red Hill, Dudley. The charges were exploded by electricity instead of in the ordinary way, and by this means any number of animals (even a hundred or more) may be instantly killed by the same current of electricity. Two large horses and one donkey, which were unfit for work, were drawn up in line about half a yard apart under a shed, the donkey being in the centre. A small primer of dynamite, with an electric fuse attached, was then placed on each of their foreheads, and fastened in position by a piece of string under the jaw. The wires were then coupled up in circuit, and attached to the electric machine, which stood about five yards in front. The word "ready" having been given, Mr. Johnson simply turned the handle of the machine and discharged an electric current, which exploded the three charges simultaneously, the whole of the animals instantly falling dead without a struggle. The experiment astonished the by-standers, who were surprised by the suddenness of the shock and the efficient manner in which it was accomplished—it having taken scarcely two minutes to conduct the experiment.

Correspondence.

EDUCATION AND SCIENTIFIC ACQUIREMENTS.

To the Editor of the VETERINARY JOURNAL.

SIR,—In the *Veterinary Journal* for September and October, are letters from Mr. Greaves and Mr. Dyer on the above subjects. Mr. Greaves' letter, and its quotation in Mr. Thomas Taylor's name, appears to have given rise to some misapprehension as to its meaning, and some have supposed that it was intended to decry education. When we remember that both Mr. Greaves and Mr. Taylor have been among the foremost workers for the late great improvements effected in our professional education, it will be seen that the above impression is quite erroneous.

Mr. Greaves rightly lays great stress on the necessity for a good practical education; but, as Mr. Dyer most forcibly and truly says, "If our leaders of thought should advocate anything but a combination of scientific and practical instruction, it would be suicidal."

The position of the professional man, wherever he may be located, depends in a great measure on his education. He may be very successful in his occupation, but if not possessed of general knowledge he will find that he has no subjects in common with those he can reasonably hope to associate with, and that therefore an estrangement soon succeeds any advances that may have been made.

It might almost appear a needless waste of time to insist upon the value of education; yet there are some who rail at it. We must remember, however, that mental suffering is what we have to endure more often than physical; therefore education, which disciplines and strengthens the mind, will enable

us to fight the battle of life with greatly increased chances of success. The father who does not give his children the best education possible in his circumstances, neglects his duty both to them and to the state, and they will bitterly remember his shortcomings when experience teaches them, as it surely will, what they have lost.

In saying what follows, I wish it to be understood that, when I use the term "education," it is not that a man must necessarily have been at a very good or expensive school, but that he is one who reads to improve his mind, and keep pace with the knowledge of the day, on subjects of general interest to those whom he meets.

A professional man, medical or veterinary, will keep no position because he is in a profession. He may have a certain social position accorded to him at first; but it is only conditionally that he is able to keep it. This he will have to do by his own acquirements and his skill in his avocation: in fact, he will soon discover that he is taken for what he is found to be worth. If a bad and unskilful practitioner, he will obtain no clients, or if he finds them will soon lose them; for people are usually very acute when their private interests are concerned, and they will go to those who can give them the best return for their money. In short, education will enable the successful practitioner to occupy the position which his success in his profession has prepared for him, and which, without education, he cannot occupy.

It has been said by a distinguished writer, that the educated man cannot help a feeling of superiority over the uneducated, no matter what the wealth or social position of the latter may be. This is only natural, because one possesses a great advantage which the other lacks; he finds it an advantage that unconsciously asserts itself, and which the uneducated are constantly showing that they recognise and appreciate.

Why those who lack education are so ready to acknowledge its advantages, may strike some people as strange; but it is common sense that enables them to do so, because they cannot avoid seeing the privileges it confers, and that without it much of what is pleasurable in life is lost.

Of two children who are taken, if one be educated and the other not so, the one whose mind has been trained, disciplined, and expanded—in short, who has been taught to think—obviously chooses and enters upon his vocation with enormous advantages. Of course, if a young man should become a veterinary surgeon, and yet be unskilful in his profession, he will fail; but so would a joiner or one engaged in any business who did not know it well. That is a matter requiring no demonstration.

The time for railing at education has passed away. At best it was only affectation, and was an endeavour to make light of what was not possessed. In fact, it was, and is, wherever shown, an exemplification of the old fable of the fox and grapes.

It is not questioned that some educated men have failed as veterinary surgeons, through not knowing their profession; but most of them were men who had tried and failed at other avocations before they took to veterinary medicine as a last, and what they erroneously thought was an easy resource.

During a service of twenty years in the army, I have met numerous veterinary surgeons in all parts of the United Kingdom and abroad. I need scarcely say, that the successful ones were clever and energetic men who would have come to the front in any walk of life. With most of them I have had many conversations; and without one exception I have found them advocates of good education. The late Mr. John Lawson, of Manchester, a President of the Royal College of Veterinary Surgeons, than whom no one was more successful and respected, was one of the greatest upholders of the necessity for good education to the veterinary

surgeon ; and a long friendship with him enables me to state, that he to the last diligently studied his profession and other useful subjects.

Much has been said about classical education. It is obviously of enormous benefit to any student or veterinary surgeon. The time must come when some classical education will be deemed indispensable. A knowledge of Latin and Greek, though it be little, will greatly smooth the professional path ; it is easily acquired, and the time so spent will never be regretted. Some knowledge of French and German is also very advantageous.

My experience of veterinary surgeons differs from that of Mr. Greaves. Meeting many of them in different parts of the country, I have no hesitation in expressing the opinion that the treatment pursued by them is very much more rational, is based on much more practical knowledge, and is undoubtedly far more successful, than obtained some years ago. Of course, each twenty years passing over a profession will find the practitioners generally much improved. It cannot be otherwise, for it is not to be supposed that many earnest and thoughtful minds produce nothing during such a long period of time. Again, the instruction given at the colleges, and the examination tests, are much more practical, besides happily being much more scientific, than they were not many years ago.

What has kept our science in an unsatisfactory position, has been neglect of education. Owing to this, our literature was until the last few years scanty, and unworthy of us ; and the profession was unable to assert itself, and to place its utility and great power, when developed, of doing good before the world. A happy change has now taken place, numerous good standard professional works have recently appeared, and the time has gone by when veterinary surgeons would quietly suffer themselves to be made a target for ignorant and malicious slander.

Knowledge is power. Good education confers never-ending enjoyment on him who possesses it, because it enables him to associate in books with the great minds who have gone before. It unquestionably confers mighty advantages on the veterinary surgeon. Its importance cannot be overrated, and it is everywhere acknowledged. Acting under the influence of public opinion, parliament has made the education of the children of all classes compulsory. Education trains and invigorates the mind, and makes it far more capable of receiving instruction, and of rationally applying its acquisitions and experience.

If, then, I may presume to say a word to those who are now on the threshold of their studies, it would be—Diligently work at your profession. Be sure to learn the practical part, and also perfect yourselves in every way in the manual performance of all operations. If you neglect this, you will bitterly regret it. While thus obtaining what may be called the skeleton of the profession, you can at the same time be preparing to cover it in all its various parts by your reading, your experience, and the instruction which you will gain, not only at College, but even to the last day of your life. To acquire general education is easy, and a very little time taken daily from idle hours will soon make its acquisition an almost indispensable pleasure.

It is a matter requiring no demonstration, that those entrusted with the care of youth preparatory to joining a profession, should give the best education in their power.

In conclusion, then, the scientific and the practical education should go hand in hand ; it is necessary that both should be the best obtainable, and to attempt to divorce them would only be shortsighted folly.

Your obedient servant,

JAMES LAMBERT, F.R.C.V.S.,

Leeds Barracks, 13*th October*, 1877. 17th Lancers.

NITRITE OF AMYL.

To the Editor of the VETERINARY JOURNAL.

SIR,—Would you kindly allow me space to reply to Mr. Alexander Lawson's letter, which appeared in the *Journal* of this month? I trust he does not consider that my notes on Nitrite of Amyl were written for the purpose of ridiculing his clinical remarks. On the contrary, I fully appreciated Mr. Lawson's courage in trying a "new remedy"; and knowing Mr. Lawson personally, I am sure he has his profession too much at heart to publish anything that he could not substantiate. When I mentioned that the remedy was not "new," I meant in human practice. Being greatly interested in anything relating to physiology and therapeutics, I am pleased to know that Mr. Lawson intends giving Nitrite of Amyl another trial, and hope he will publish his notes regarding it. I was speaking to my friend Mr. Tom Taylor, F.R.C.V.S., Manchester, about Nitrite of Amyl, and he said he had failed to do any good with it. Mr. W. G. Taylor, M.R.C.V.S., Nottingham, has also told me that he gave it a trial in large doses in Tetanus, and found it of no use.

Yours faithfully,

London, *Oct. 4th*, 1877. J. DOWLING ALLMAN, A.P.S.

COPULATION AFTER EMASCULATION.

To the Editor of the VETERINARY JOURNAL.

SIR,—I should very much like to know if the following is a rare occurrence. Last month I castrated a bulldog, three years old; and, to my surprise, seven days afterwards I saw him serve a bitch, to all appearance as well as if he had not been operated upon. I have not observed him take any notice of a bitch since.

I am, yours truly,

"EDINA."

[Such an occurrence as that mentioned by our correspondent is not very common, though it is sometimes observed in the case of adult animals which have been recently emasculated—never with animals which have not attained the age of puberty before the operation is performed. We have, in our own experience, known an aged Arab horse cover a mare in heat two days after he was castrated. There is no instance on record, we believe, of coition being attempted more than once by such an animal, though impregnation may follow this attempt. The interval which elapsed between the operation and coition in the case recorded by our correspondent is certainly long; but as the attempt was undoubtedly due to the presence of spermatozoids in the remaining portion of the spermatic duct or *vas deferens*—there are no *vesiculæ seminales* in the carnivora—which stimulated the venereal desire and led to the accomplishment of the act, we cannot doubt that these fecundating particles had retained their vitality during that time. Colin mentions that he has found living spermatozoids in the pelvic convolutions of the deferent canals of a horse, eight days after castration. It would be interesting to know whether fecundation followed the attempt, though it would also be necessary to ascertain whether other dogs could have had access to the bitch, if she proved to be pregnant.]

AMERICAN "BOGUS" DIPLOMAS.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I am glad to inform you that I have succeeded in breaking up for ever a "Bogus Veterinary Diploma Mill," which had been running in this city for some years.

About a year ago, from information I received from people who had been written to, I felt sure that a person with some little knowledge of horses could get a diploma from a "firm" here (who were manufacturing them to order for cash), if they would not ask too many questions. So I made up my mind to catch the guilty parties, and expose them; as I knew that would be the best way to spoil their "bogus business," and show the public what little value ought to be attached to diplomas from strange and unknown "Institutions" called Colleges.

I wrote several letters to a man named Robert McClure (but of course called "Dr."), and had them posted in different States, asking him the amount of money I must send for a diploma. His answers were quite satisfactory, and his price for one ranged from $135 down to $100 if properly signed and sealed. At last I closed two bargains with him for two diplomas, one for $120, the other for $100, to be paid for on delivery at his office here. Then I asked the police authorities to assist me by taking the man into custody as soon as he received the marked money, and had handed the stranger (to him) the diploma. They willingly agreed to this, as it is against the law of this State to sell "bogus" diplomas. I got a young man to take $120 of marked money, and to obtain the diploma from the "Dr." It was all ready, as arranged by letter; the money and diploma changed hands; and, as the young man was leaving with the latter, a detective arrested Robert McClure and relieved him of the $120. He found several other diplomas all ready signed and sealed, with the names of those for whom they were intended filled in. He was at once taken before a magistrate, who committed him for trial. He employed the best counsel in this city to defend him; and after he had succeeded in getting the trial postponed four times, he was tried and convicted about a week ago of forgery, as two of the names attached to the diplomas were forged. The Judge sentenced him to pay a fine of $200 and the cost of the prosecution; also to confinement in the county prison for nine months. McClure tried to take poison, but was prevented from ending his life in that way. His counsel then got a writ of error from one of the Judges of the Supreme Court, on the ground that no person was defrauded by such forgery. So you see I cannot tell you how it will end; but I am satisfied that man will try some other business in the future. If you would like a copy of one of the "bogus" diplomas, I can get you one from the police, as they have several of them locked up at the station-house. Yours most respectfully,

J. W. GADSDEN, M.R.C.V.S.

134, N. Tenth Street, Philadelphia, U.S., America, *Oct. 5th*, 1877.

[By all means send a copy of the fraudulent document to the Royal College of Veterinary Surgeons, Red Lion Square, London. It may not only prove curious, but also of service, at some time or another, in the detection of impostors.]

RETRACTION OF THE TESTICLES WITHIN THE ABDOMEN.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—A short time ago I poisoned a dog which had Paralysis of the right hind-leg, and fistulous anus. My attention had been drawn to the fact that prior to these ailments the testicles were plainly visible within the scrotum, but that subsequently they had disappeared.

On making a *post-mortem* examination, I found them in the abdominal cavity, well developed, and only loosely attached by the spermatic cord. The dog had received a severe beating with a broom-handle during copulation,

which is the supposed cause of the mischief; and I presume either it or the irritation of the fistula caused the testicles to be drawn up thus. As I have never previously seen or heard of such an effect, I should be most pleased to have the benefit of your experience on the subject,

And remain, yours truly,

Manchester, *October* 15*th*. JNO. B. WOLSTENHOLME.

[We are not aware of any similar instance to that recorded by our correspondent, and can scarcely believe the retraction of the testicles into the abdomen possible in the adult animal, unless the abdominal rings were abnormally wide, and the action of the cremaster very energetic.]

CORRIGENDA.

IN the prefatory remarks to the paper entitled "Neology in the Veterinary Art," which appeared in our last impression, it was mentioned that, among other publications in which the article was re-published, the *Sporting Gazette* was one. This was an error, as that periodical did not reprint the effusion, or make any allusion to it. The *Sporting Gazette* was mentioned instead of the *Sporting Times*. It may be noted that *Bell's Life* also gave insertion to the defamatory and untruthful article from *Baily's Magazine*.

TO CORRESPONDENTS.

"EDINA."—Members of the veterinary profession who advertise themselves as commission agents for the sale of horses can have but a poor opinion of themselves or their calling. Such conduct does us great injury, and is very reprehensible.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from Professor T. W. Mayer, Cirencester; C. Marking, Topplesfield; J. D. Allman, London; Professor Walley, Edinburgh; T. H. Simcox, Drogheda; J. Lambert, 17th Lancers, Leeds; B. C. R. Gardiner, Staff Veterinary Surgeon, Woolwich; "Edina;" J. B. Wolstenholme, Manchester.

BOOKS: *R. Moreton*, On Horse Breaking; G. *Nevile*, Horses and Riding; *Müller* and *Poloff*, Mittheilungen aus der Thierärztlichen Praxis im Preussischen Staate; Erster Jahersbericht der Königl. technischen Deputation für das Veterinairwesen über die Verbreitung Ansteckender Thierkrankheiten in Preussen; *Peuch* and *Toussaint*, Précis de Chirurgie Vétérinaire (vol. ii.); Report upon Contagious Pleuro-pneumonia occurring in Cattle; *F. J. Gant*, A Guide to the Examinations at the Royal College of Surgeons of England; *R. Brown*, The Races of Mankind.

JOURNALS: *American Veterinary Review; Archiv. fur Wissenschaftliche und Practische Thierheilkunde; Annales de Méd. Vétérinaire de Bruxelles; Journal of the Anthropological Institute; Medical Press and Circular; Archives Vétérinaires; Revue Vétérinaire; Wochenschrift für Thierheilkunde; Journal of the National Agricultural Society of Victoria; Der Thierarzt; Recueil de Méd. Véterinaire; Archivio di Medicina Veterinaria* (two parts); *Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Il Medico Veterinario; Giornale di Medicina Veterinaria; Animal World; Lancet; Edinburgh Medical Journal; Practitioner; American Live Stock Journal.*

NEWSPAPERS: *Homeward Mail; Field; North British Agriculturist; Farmer; Mark Lane Express; Agricultural Gazette; Sportsman; West London Observer; Philadelphia Public Ledger* (two copies); *Leeds Mercury.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

DECEMBER, 1877.

A CASE OF RABIES IN THE HORSE.

We shall probably never know, even approximately, the number of animals which have died of Rabies or been destroyed as rabid, since the present outbreak commenced; indeed, it is very rare that cases of the disease are reported by members of the profession—probably because it is deemed to be so common as not to deserve mention. If this surmise be correct, we can only regret that such a notion should prevail. It is of the greatest advantage, nay, importance, that everything connected with this terrifying and fatal malady should be made known; and veterinarians can contribute largely—and have already done well in this direction—in adding to our knowledge of it. Much yet remains to be done, and we earnestly hope that the present opportunity will not be allowed to pass without availing ourselves of the chances it offers for observation and investigation. We know for certain that many animals have recently died from transmitted Rabies in the various counties in England where the malady has prevailed; and yet, strange to relate, no account of any cases has been published for many months. To Captain Cotton, of the 21st Hussars, stationed at Shorncliffe, and to Mr. Collins, Principal Veterinary

Surgeon, we are indebted for the following particulars relative to a case of Rabies in a mare—a charger belonging to the first-named officer.

The mare was a well-trained and very docile animal, rising nine years of age. She was kept in a stable in which were two dogs, one of which had been destroyed as "mad," after biting two soldier servants rather severely in the hands, several weeks before the mare exhibited any unusual symptoms.

On the morning of September 14th, the groom, on entering the stable, noticed that the mare was not inclined to eat her usual food; and some bran mash having been placed before her, only a small portion of it was picked up. Usually of a most gentle disposition, and much attached to the groom, she was now very peevish, snapped at him with her teeth, and was inclined to kick. Nevertheless, she was sufficiently manageable to undergo her usual amount of exercise.

The groom had previously remarked a slight wound in the skin on the posterior part of the near hind-leg, about six inches below the point of the hock; but it was not until afterwards that this wound was associated with the peculiar symptoms the mare exhibited, and its origin suspected.

On the 15th, the animal had not eaten any food, and she was in a more irritable and excited state than on the previous day. She was perspiring profusely, pawing with her fore-feet, stamping with the hind ones, champing her teeth, and throwing herself violently down in the stall, whether any one was present in the stable or not. At times she would seize a mouthful of bran, but did not attempt to swallow it; indeed, she appeared to be scarcely conscious of what she was doing, or of what was going on around her.

On the 16th the symptoms were still more urgent. As she was required for her master to ride, it being the General's inspection, the groom attempted to saddle her, but at last came to the conclusion that she was not in a fit state to be ridden in the riding-school. Captain Cotton, on being informed as to her condition, brought the regimental veterinary surgeon with him to see her. The latter, however, could not discover anything to prevent her being ridden; so with much trouble, and not without danger,

she was saddled, and Captain Cotton managed to get her into the riding-school. When brought among the other horses, she was extremely restless and violent, biting and kicking at them,—a most extraordinary circumstance, as she had previously been one of the quietest animals among horses in the regiment. In the midst of this fit of fury she suddenly threw herself down, and Captain Cotton, having disengaged himself from her, sent her to one of the infirmary loose boxes. On being offered water, she attempted to drink it, but was unable to do so, from evident difficulty in deglutition. This inability to swallow made her stamp and paw still more, as she was apparently very thirsty and anxious to drink. She rushed about the box, kicked and scraped at the litter, floor, or walls; gnashed her teeth, snapped at anything and everything—even at vacancy; and neighed loudly—almost screamed. This was in the forenoon. At 4 p.m. the symptoms were still more violent; though when offered water, the poor creature still urgently tried to swallow some, but unsuccessfully. The eyes looked wild, the pupils were widely dilated, and the conjunctivæ highly injected. At 12 p.m. the symptoms were, if possible, still more alarming and furious. On water being placed before her, the mare still tried hard to drink some, but failed; and the attempt either caused pain or the failure distress, as she sprang back from it as if afraid, though she made attempt after attempt. She occasionally rushed, with open mouth and staring eyes, towards the half-door of the box, as if to bite it; but then, as if blind, she would miss it, and the upper part of her neck would come into violent contact with it.

At 4 a.m. on the 17th, the mare staggered back after one of these rushes at the door, fell down, and died in a minute or two —apparently from nervous exhaustion.

The notes of the *post-mortem* examination are extremely meagre, and merely mention that there was an effusion (?) of lymph into the larynx and upper part of the trachea, caused by injury as described above. "Other organs apparently healthy."

Captain Cotton writes, under date October 31st, to the effect that on that day he had heard from the Colonel commanding the 21st Hussars that his daughter's toy-terrier had "gone mad,"

without having been bitten (?)—to their knowledge—by another dog. Fortunately it did not bite any one.

We would beg of our colleagues who have the opportunity, to send us reports of any instances of Rabies they may meet with, and, if possible, to ascertain, in transmitted cases, the condition and fate of the animal which inflicted the wounds. We are urgently in need of information in this direction, and also with regard to the pathological anatomy of the disease and the alterations which take place in the nervous system. The above case in the 21st Hussars offered an excellent opportunity for studying the pathology and lesions of Rabies in the equine species, and especially for a microscopical examination of the nervous centres. If any of our readers will do us the favour of forwarding the brain and spinal cord of animals which have been affected with undoubted Rabies, we shall have a careful macroscopical and microscopical examination made, and publish the results. These parts should be sent in as fresh a condition as possible, or hardened in a weak solution of chromic acid.

COLLOID CANCER OF THE UPPER AIR-PASSAGES IN A HORSE.

BY R. S. REYNOLDS, M.R.C.V.S., LIVERPOOL.

THE subject of this case was a black cart-horse, rising five years old, purchased from the breeder for town purposes on 11th December, 1873. He was put to light work immediately, and continued thereat until the latter end of February, 1874, when he had a slight attack of Sore Throat, for which he was rested for a few days. Some short time afterwards, he was suddenly attacked, whilst at work, with difficulty in respiration of so severe a character, as to render it necessary for him to leave the cart he was working in and be taken slowly to his stable. On the way, however, the carter states the horse was so bad, he called at my friend Mr. Procter's, who put in a tracheotomy tube, as he afterwards told me "just in time to save his life." In a day or two afterwards the horse was to all appearances quite well again; the

existence of tumour or laryngeal affection of any kind could not be detected. He worked with the tube until August of the same year, when it was removed, and he continued to perform his work satisfactorily until December, when he had another attack of "roaring," from which he was unfitted for work for fourteen days. He resumed work early in January, 1875, without the tube, and continued thereat till November, when suffocation was again imminent, and I put in a permanent tube, in which he worked until his death, on September 11th ultimo, with the exception of twenty-seven days in the June and July previous. About the middle of June he, although wearing the tube, was similarly affected as he had been on previous occasions: he could not trot a hundred yards, nor draw an empty cart twenty yards; and at the same time he apparently suffered from Sore Throat, difficulty in swallowing, cough, and nasal discharge. I examined the trachea, which was constricted somewhat below the lower end of the tube, but not so much as to prevent a staff an inch in diameter being easily passed—indeed, not much, if any more constricted than I found it to be on *post-mortem* examination. As I have before implied, he recovered from this attack, was put to work again on July 9th, and continued until the day of his death, September 11th. I should further remark that throughout the whole time he was in the possession of the Corporation he was subject to mild attacks of what I believed to be Flatulent Colic, but I could not at any time associate these attacks with the more severe and more rare ones affecting his breathing. The former appeared to be due to his becoming for a time a most complete "windsucker," but he was not habitually addicted to windsucking; the symptoms he presented at these periodical attacks were rigors, tympanitis, and indications of abdominal pain. I saw him at work on the 11th of September, and remarked how well he was looking: he carried himself gaily, and was in good spirits and condition, and I mentally wondered what his *post-mortem* would reveal. On being stabled that evening he was to all appearances as well as usual, ate his supper, and was right and drank at 10 p.m. At 11.15 the horse-keeper found him, as he thought, about to have one of his usual attacks of Colic, removed him to a loose box, and administered a Colic

drench—which not having its usual effect, and the symptoms becoming alarming, I was sent for. On my arrival, at 1.15, the horse was dead. I ascertained that there was extreme flatulence, profuse perspiration, surface of body cold, violent abdominal pain, and roaring so excessive he could be heard fifty yards off. From commencement to finish he was not ill for more than 2½ hours.

I was prevented from making a *post-mortem* examination except of the head and trachea, which I ordered to be sent to my surgery. I now much regret not having examined his thoracic and abdominal viscera, as it might possibly have revealed indications of an attack of Apoplexy of the mucous coat of the bowels, which can and does prove fatal in a very short time.

On examination of the trachea and head, I found the former pervious throughout, though of course it was much constricted above the insertion of the tube, and to a less degree below. In the areolar tissue around the larynx and pharynx, and extending some way down their continuations, I observed a considerable effusion of very dark-coloured blood—*certainly* an *ante-mortem* extravasation. In my further examination, I laid the head on the table with the lower jaw uppermost, and separating the larynx and pharynx from their attachments one by one, turned them back between the rami of the lower jaw; when I came across, in the situation normally occupied by the guttural pouches, a dark, firm, bloody-looking mass, which I removed as well as I was able from its attachments to the inferior surface of the sphenoid bone, and forwarded it to the Brown Institute for your examination the same evening. The tumour did not involve the velum, but must have pressed against it. I shall be glad, if you do not think the case too imperfectly recorded, for it to be published in your Journal, with such remarks thereon as may render it interesting to the readers.

[It is very much to be regretted that a careful and complete *post-mortem* examination of the horse was not made, and particularly of the lungs; as in these organs some alteration or condition might have been found to account for the attacks of suffocation described as occurring, even when the animal was wearing a tracheotomy tube. The attacks, also, of abdominal

pain testified to the presence of disease or derangement of the organs in that cavity. A careful examination of the entire body would, doubtless, have proved interesting and instructive. Mr. Duguid, who kindly examined the morbid portions sent to the Brown Institution, writes: "The tumour sent by Mr. Reynolds was one of very unusual character. It appears like a large soft blood-clot, and evidently occupied the space described in the notes of the case, a small portion of both parotid glands being attached to it. On microscopic examination, it proved to be a case of Colloid Cancer, and is a most interesting specimen."]

SAND-EATING AMONGST HORSES.

BY W. S. ADAMS, M.R.C.V.S., ROYAL ARTILLERY, REMOUNT DEPÔT, OOSSOOR, INDIA.

HAVING observed a communication in the *Veterinary Journal* for September, from Captain Russell, relating to a case of Enteritis and rupture of the stomach, in which a large quantity of sand was found in the intestines, I am induced to offer a short account of instances of "sand-eating" which have come under my notice, and trust they may be of interest to your readers.

In February of this year, a number of Walers were purchased in Madras from a recently imported batch, and forwarded to the Depôt. Owing to the long protracted drought, straw for bedding was not procurable, and the horses of this batch were bedded in Madras with sea sand.

One horse died on his way to the Depôt, from Enteritis, and a large amount of sea sand was found in the intestines; the amount was not weighed, no appliances being at hand. Shortly after their arrival, several horses were admitted into the sick lines, showing symptoms of abdominal pain, and at the same time voiding quantities of sea sand. One died; and 22 lbs. of sand (weighed when dry) were found in the colon.

Three other horses were placed under treatment for sub-acute Enteritis, and before leaving the sick lines passed respec-

tively 17½ lbs., 9½ lbs., and 3¾ lbs. The horses of this particular batch gave much anxiety for some time; they did not thrive, and from amongst them there were continually cases of Colic, Diarrhœa, and irregular and irritable state of the bowels, usually associated with the passing of sand; and within the past week, eight months since their arrival from Madras, there have been two cases of Colic, both of which passed considerable quantities of sea sand. There is no doubt as to its being *sea* sand which was voided by these horses, as in it portions of shells were observed. I consider that these horses must have licked up the sand with which they were bedded—probably on account of the salt it contained.

With regard to treatment, I found that little could be done, and that when sand was passing naturally, the less attempted the better. In all cases in which Diarrhœa was present and the fæces became fluid, the sand ceased to pass, and on the purging being checked, frequently large quantities of sand would be expelled. I avoided purgatives, but kept the bowels free by means of laxatives and soft food, and endeavoured to allay any irritability of the intestines by means of sedatives.

When stationed at Bellary, in 1871, my attention was drawn to the frequent cases of horses passing quantities of sand and gravel; and on making investigation, I found that no less than thirty-six horses of a native cavalry regiment—of which I was in veterinary medical charge—habitually licked the ground at their pickets. In this instance, also, I consider that the horses licked the ground to obtain the saline matter with which the soil in the Bellary district is impregnated.

Cases have occasionally come under my notice of horses dying from Enteritis, due to the presence of large quantities of sand or gravel, no doubt taken in wholesale from "morbid appetite." Cases which can only be traced to "morbid appetite" are, in my experience, usually met with in Australian horses; and I heard recently of a case in which an Australian, an officer's charger, died from Enteritis, and no less than 80 lbs. of sand were found in the intestines. This horse had been bedded with river sand.

GENERAL EMPHYSEMA.

BY THE SAME.

THE following case occurred in a battery of horse artillery at Secunderabad, of which I was in veterinary charge.

A powerful and somewhat restive wheel horse, when in draught, made an unnecessary jump at a small "grip," and got the off trace between his fore-legs ; on the trace being tightened, the trace hook cut him on the inside of the off fore-arm, causing a severe wound and severing the *pectoralis transversus* muscle. The horse was at once unhooked and led home—a distance of about three miles. On arrival at the sick lines, he presented an extraordinary appearance, the whole body being in a state of "Emphysema" from the poll to the croup. The emphysematous swelling was more marked on the neck, in front of the chest, and on the off quarter, and least on the near quarter. The horse was in evident pain, and was much distressed. I at once made incisions at various points—in front of the chest, behind each elbow, and at the off flank—and by gentle hand-rubbing succeeded in evacuating a large quantity of air which was superficial. This gave evident relief.

I prepared the horse for physic. There was subsequently considerable sympathetic fever. Although much of the superficial air was removed, there remained large quantities in the deep-seated tissues which could only be removed by absorption, and it was six weeks from the date of the accident before the Emphysema had entirely disappeared. The horse lost flesh considerably, and was much debilitated. I am of decided opinion that in this case there was no wound penetrating the thorax and injuring the lung tissue, but that the air found its way into the tissues by means of the wound under the fore-arm : penetrating, as it did, to the loose cellular tissue, assisted by the motion of the limb in the three-mile walk taken immediately after the accident.

THERAPEUTIC NOTES.

BY PROFESSOR WALLEY, M.R.C.V.S., EDINBURGH VETERINARY COLLEGE.

SALICYLIC ACID, as an external application in skin diseases accompanied by moisture, is invaluable. In Otorrhœa, in Acute Eczema, and in cracked heels, it is very beneficial. It is superior to carbolic or creosote dressings, in wounds accompanied by fœtor—often establishing healthy action when these agents fail. It may be employed as an ointment, 1 or 1½ to 8; or as a lotion, 1 to 12 or 20—with a little glycerine. Its value in dog practice is enhanced by its perfect innocuousness.

I have only tried it twice as an internal refrigerant, but without marked result.

MILK AS AN INJECTION IN ACUTE DYSENTERY.—For many years I have given milk to a large extent in bowel affections, accompanied by inordinate discharges. Some few months ago I was attending a valuable short-horn cow, suffering from Metritis. On the second day of the attack, Dysentery (vicarious) set in very severely; the mucous membrane of the rectum was corrugated, and extremely hot, as detected by manual exploration; temperature 107°. I ordered an injection of cold new milk in the morning; it was retained all day, and at night, on re-examination, I could detect no recent coagula of blood in the rectum, and its temperature was reduced by 3° F. From this time the cow made a rapid recovery. Opium, ipecacuanha, and camphor, with milk, were administered internally.

A FEW REMARKS RELATIVE TO THE USUAL SKIN AFFECTION OCCURRING IN INDIA, KNOWN AS "MANGE," "SURFEIT," "PRURIGO," ETC.

BY STEPHEN KNOTT, M.R.C.V.S., ROYAL ARTILLERY.

THIS is a disease which is very annoying and troublesome to our horses in India, and if not greater, is equally, a source of trouble and annoyance to the army veterinary surgeon in his

endeavours to conquer and eradicate it, as at times it will resist all treatment, and prove most unsatisfactory to cope with. In batteries of artillery and regiments of cavalry there will always be found a large percentage of horses suffering from this complaint; and in some cases, in spite of all treatment, both local and constitutional, it will still remain chronic. Moisture appears to aggravate it, and cause a greater extent of eruption; as, according to my experience, in the rains it assumes a more aggravated form. I have known it to be so bad that horses have been completely thrown out of work, being unable to carry their harness on account of the raw and inflamed state of the skin, which had an appearance resembling Scabies, with a sero-purulent secretion underneath the raised eruptive crusts. Owing to the great irritation it causes, I have frequently seen horses in the troop lines lying down on the ground and rubbing their bodies into raw patches. And this raw surface was, of course, greatly inflamed by dirt, etc., being pressed in,—added to which, there was the influence of heavy dews at night, and a scorching sun in the day, acting upon this most tormenting disease, when the sufferers were not under cover.

The parts where the disease makes its appearance may be anywhere on the body; but it has generally a preference for the shoulders and sides, roots of the mane, the sides of the face, and sometimes the flat portion of the withers. When it does appear at the roots of the mane, it causes the horse to partially destroy it, leaving the remaining portion of the mane like a hog's bristles; it consequently makes the animal appear very unsightly.

I believe the usually prevailing opinion in India is, that this disease is similar to "prickly heat" in the human subject, and that its origin is partially due to constitutional predisposition, accelerated by climatic influences. Possibly this theory may be correct. I am of opinion, however, that the affection most probably owes its origin to either of the following: to a "parasite zoophyte (although I cannot say so for certain, nor can I prove it, for I have never examined any of the eruptions, or the scales from the eruptions, by means of the microscope,—I only surmise that such may be the case); or the disease may be

analogous to *Malabar Itch*, from which the natives suffer considerably, especially the horsekeeper and grass-cutter caste. It is often to be seen on the horsekeeper's hands, between the fingers, on the legs, thighs, feet, etc. Why should not horsekeepers transmit it from themselves to the horse? For instance, if they have it on their hands, they must contaminate the grooming implements; and also when riding and taking the horses to water or exercise, as their legs and thighs are often covered with sores of *Malabar Itch.* Again, at evening stables, where the horses have their "coomblies" or blankets put on, they are then handled by the horsekeepers; and it is only natural to infer that where the hands are affected the clothing may easily be contaminated, and so cause the spread of the disease among the horses. For it is possible that the coomblies are at times changed from horses suffering from skin disease, to those that are not. The same might almost be said of the grooming implements.

Further, I have often noticed the children of horsekeepers crawling about the horse lines with patches of *Malabar Itch* over them; and who can say that they may not have been sitting on the coomblies, or rolled up in them even, before the latter have been put on the horses?

Another view of mine is that pariah dogs may produce skin disease in horses. I have often seen them about the lines, owned by horsekeepers; and in many instances the animals were covered with sores. Possibly these dogs might lie on the coomblies when these were thrown off by the horses during the night, or the dogs lie with the horses when down.

As to treatment, every veterinary surgeon has his own particular views on that point; and quite right too. The following suggestions, however—the result of actual experience—may not be considered out of place here. Before commencing to treat your patients with any remedial agents, the first thing to be done is to put the animals under cover, away from exposure to the sun's rays. If this rule is not followed, no remedies can be applied with safety to the skin; as the action of the sun and the dressing used would irritate it too much, and bring about an extremely inflamed condition of it. After placing the horses under

cover, the next precaution taken is to have them well washed with soft soap and warm water, so as to thoroughly cleanse the skin before applying any unguent or dressing. Soft soap is an excellent material for skin affections, on account of its cleansing and detergent properties; and, in order to make it more effective still, add a proper proportion of carbolic acid to it; but before adding the carbolic acid, mix glycerine with it, otherwise it will not get into solution with the soft soap, but will be found deposited at the bottom of the jar which contains it. In India soft soap is rather expensive, and not easily procurable at many stations. It is often substituted by a nut called *soap nut*, which produces a very good lather; but I doubt whether its cleansing properties are so effective as soft soap. After the washing process the animal should be well rubbed down, and when dry and clean, anointed with some skin dressing.

To start with, there are several dressings; and if one does not seem to answer effectually, after a fair trial, it ought to be changed. It must never be applied on a dirty animal—as for example, after the horse has been down all night in its dirty litter, and is possibly begrimed with cloggy dust from the floor of its stall; but, on the contrary, it ought to be washed and cleansed before being dressed again, because, if cleanliness is not observed, the parasite, if there be one, is not destroyed: it is merely fed and kept alive. Besides, should there be any tendency to inflammation of the skin, it is inflamed more by rubbing in dirt and dressing, and difficulties are increased thereby, in having to contend against and allay the irritation of the part before continuing the treatment.

Preparations of sulphur and of tar have their beneficial effects (refer to Morton's "Veterinary Pharmacy"), as well as lotions of hyposulphate of soda, carbolic acid, and several others (see Fleming's "Sanitary Science and Police," vol. ii., p. 471, where will be found numerous remedies named for Ringworm and skin affections). Hygienic measures are, of course, the most essential part of the treatment.

Diet is another item to be named. As much fresh green food as can be procured (such as lucerne, Guinea grass, etc.), is a great alterative. At one station during my stay in India, I had a very

fair-sized garden of Guinea grass, well enclosed by a bamboo fence. The Guinea grass roots were begged from different residents at the station; and as I had a plentiful supply of water, I could flow a great quantity over it whenever necessary. This proved a great luxury to my patients, and no doubt assisted in doing good. Of course, this could not be accomplished at every station in India, but only where sufficient waste water was to be had. Medicine assisted to allay irritation, by giving occasionally a mild aperient, combined with small doses of calomel, and at other times alteratives: potass. iodidi in the food, and potass. nit. sulphur, etc.

The disease in chronic cases was never cured, but only partially arrested; for when the hot weather and ensuing rains came on again, they were just as bad as ever.

Difficulties with regard to treatment were met with. Firstly, there was the climate, and exposure to the sun during the day and dews at night, whenever there was not sufficient room for them under cover. Secondly, the ground on which they lay was mud beaten down, which afterwards became dry and dusty; and when the patients lay, they naturally rolled and smothered themselves in dirt. If there were paved stables, similar to those we have at home, that difficulty would be removed.

Whenever there is not sufficient room for the horses suffering from skin disease, I am in favour of a "chupper" shed being erected, which in many cases can be done by a strong recommendation from the officer in veterinary charge. One objection is sometimes put forward—viz., that the natives might set fire to it; and another, which is in too many cases unanswerable, "Who is to pay for it?"

With reference to washing horses, horsekeepers will wash them, and afterwards leave them in the open under a burning sun to dry. The result is often fever, accompanied with congestion of the liver; or the foundation is laid for "Kumree," or partial paralysis of the hind extremities.

With regard to the opinion entertained by many in India that skin disease may not be a parasitic malady, it may be observed that the irritation which is set up by the parasite, if there be one, is productive of the prurigo and eruption; that the

effect of climate, action of the sun, etc., influences the irritation : hence the eruption.

The principal aim is to get at the disease, which doubtless in chronic cases is very much imbedded in the cutis; and continual washings and repeated applications of oil will eventually soften the skin and remove the scales. When dressings of different kinds are applied to the parts where this precaution is not adopted, the disease takes longer to cure.

In conclusion, I do not for certain say that this is a parasitic disease; but it is an idea of mine that it is just possible it may be so, and it would be very satisfactory to have the point cleared up beyond doubt.

If some of our colleagues in India, or of the juniors who are about to proceed there, would thoroughly study this disease, they would confer a great boon not only on their patients, but on the medical practitioner in that country, by imparting to him a satisfactory knowledge of the causes which contribute to its development.

The microscope should decide this point for us. It is always a most useful instrument for the veterinary practitioner to keep by him.

NOVEL SURGERY.

BY THE SAME.

A SHORT time since, an officer's groom brought to me a blackbird which was suffering from a broken leg, the femur being fractured. The poor man was very much grieved at the loss of his bird, as it was a great favourite with every one, and a grand warbler. I said to the man, "We will try to set the leg," —and accordingly it was made immovable by putting it in a starch bandage (*i.e.*, a piece of tape soaked in starch).

The bird rested his leg for about three weeks; after that time he pecked off the bandage, and there was the leg all right. It had united properly; and ever since—now some months—it has remained to all appearance perfectly sound.

FRACTURE OF THE *OS PEDIS*.

BY WM. A. HURRELL, M.R.C.V.S., SOUTHMINSTER.

ON the 1st August last I was called in to see a cart-mare reported to be very lame, the property of R. Page, Esq., Down Hall, Bradwell.

History.—The mare, with a foal at her side, was out at grass, when she was found to be very lame. She had no shoes on any of her feet. The farrier had been sent for, but he could find nothing the matter with her foot, though he put a shoe on it. As the lameness increased, my opinion was solicited.

Symptoms.—The mare is very lame in near fore-foot; so much so that she is scarcely able to put it on the ground. She is also apparently suffering much pain, and constantly moving the limb. The appetite is bad, and the foot very hot round the coronet, as well as swollen up the leg as far as the knee. Pulse full, and the breathing accelerated.

Diagnosis.—Foot lameness.

Prognosis.—I believed that suppuration was going on, and that when the matter was let out of the foot the mare would soon be well.

Treatment.—The shoe was removed, when the foot was found to be very tender on pressure at the toe; it was well pared out, and then there was discovered a very large accumulation of pus. A free opening was made for its escape, and the wound was dressed with digestive ointment. Stimulating liniment was also applied to the coronet. Warm fomentations were ordered, as well as bran poultices. Gave Fever medicine.

August 4th.—Mare better, but still very lame, though not suffering so much pain. Continued the same treatment as before.

7th.—Mare better. On examining the foot, a portion of the sensitive sole appeared to be sloughing. Dressed the wound with zinci chlor. lotion, 1 to 16. Continued poultices, as there still appeared to be pus in the foot.

11th.—Mare a little better; removed portions of the slough from the sensitive sole. Continued the dressing.

16th.—Mare much improved. On removing portions of the slough, the toe of the *os pedis* was disclosed to view, presenting a

blackened appearance. On manipulation, I found that the pedal bone was broken, the anterior portion being loose. We could not remove the piece of bone with small forceps. Continued the same treatment, with the exception of the poultices.

25th.—Scarcely any lameness. The bone presented somewhat the same appearance; it was still very tightly fixed, being held by attachments of the laminæ. It was determined to remove it; so the opening was made larger, and with a bistoury the attachments of the laminæ to the detached portion of bone were divided, when it was removed by a strong pair of forceps. It was three and a half inches long, forming the entire anterior margin of the pedal bone; it varied in width from half an inch to an inch and a half. Continued the cleansing and dressing with zinci chlor. lotion and digestive ointment.

28th.—The mare is very little lame; the wound in the foot is doing well; very little discharge, and no offensive smell. Continued part of zinci chlor. lotion and cupri sulph.,—the latter 1 to 20.

September 3rd.—Mare doing well. No lameness; wound in the foot healing up; very little discharge. Continued the treatment.

8th.—Mare not quite so well; going rather more lame. Believe there is a slight accumulation of matter in the foot. Ordered bran poultices and digestive dressing.

11th.—Mare about the same; continued poultices and digestive dressing.

18th.—Mare better; very little discharge; the wound in the foot is horning over nicely; a little exuberant granulation in a place or two; the margins were touched with powdered hydrarg. bichlorid. Applied cupri sulph. lotion—1 to 12—with digestive ointment, and discontinued poultices.

October 1st.—Mare comparatively well; the wound is quite horned over; no lameness. Shoe to be put on, and the mare allowed exercise for a few days, and then to go to work.

20th.—Mare working well; no lameness. She is at road-work, as I thought if she worked on the land the sods might bruise the foot, the sole not having yet regained its former strength.

November 1.—Mare working well.

[Mr. Hurrell inquires how it happened that the *os pedis* became fractured, seeing that the mare was running out with a lot of other mares, all of them with foals. She had not shoes on for months. In all probability the bone was fractured during galloping, and it is not unlikely its tissue may have been abnormally brittle. We should much like to obtain the foot—hoof and contents—should the opportunity offer.]

GANGRENOUS MAMMITIS IN A MARE.

BY THE SAME.

SEPTEMBER 15th, 1877.—A chestnut mare, eight years old, belonging to G. W. Galloway, Esq., Cricksea Place.

History.—The mare had come off the marshes a week before, having had her foal running by her side. The colt was taken away from her to wean it, as it had a sore throat and was unable to suck; the mare being then in apparently good health. No doubt, some days previously the colt had been unable to withdraw the milk, and thus inflammation of the mammæ was produced. The bailiff had noticed the "bag" swollen and hard for several days, but did not attach any importance to it.

Symptoms.—Wasted appearance of the animal; inappetance; mammary glands hot, swollen, and very painful to the touch, and small quantities of thick pus could be drawn from both teats; dejected look; swollen legs, stiff gait. Respiration increased; pulse small; mucous membranes injected.

Diagnosis.—Mammitis, accompanied by Œdema, the latter being the result of debility.

Prognosis.—Very doubtful.

Treatment:—

15th.—Pulse 80, weak; respiration 32; temperature 104·3° (Fahr.). Ordered warm fomentations to the parts inflamed, and evaporating lotion; gave Fever medicine, with ext. belladonna 5j; removed the mare to a loose box. Diet: mash, hay, small quantities of corn, etc.

16th.—Pulse 76, weak; respiration 34; temperature 105·1°. Mare much about the same; much fever; mammary glands more

enlarged: the fluid drawn from the teats like very high-coloured serum, and very hot. Continued fomentation; changed lotion for ol. camph. liniment and sol. belladonna. Gave Fever medicine with ext. belladonna ʒj. Feed as before.

17th.—Pulse 78, irregular and weak; respiration 38; temperature 105·4°. Mare at times appearing to suffer great pain; mammary glands very hard and swollen; fluid from teats small in quantity and of a blood-like colour; legs much more œdematous. Gave Fever medicine, and continued frequent fomentations and liniment. Mare frequently picking over her food. Gave plenty of nourishing diet, gruel, ale, etc.

18th, morning.—Pulse 76, very weak and irregular; respiration 40; temperature 106·3°. Mare a good deal worse, breathing much quickened, thoracic and stertorous. Extremities rather cold, and still very much swollen; dejected look; extreme debility; mane easily pulled out. Continued fomentations and stimulating liniment; scarified the parts, when an immense quantity of sero-sanguineous fluid escaped. Gave ammon. carb. ʒiv. *cum* gentian, zingib. and cayenne.

18th, evening.—Pulse 86; respiration 46; temperature 106·2°. Mare worse; breathing more stertorous and increased in frequency. Animal perceptibly weaker. Gave ammon. carb., etc., as in the morning. Mucous membranes very pale. Apparently sinking. Nourishing gruel, stimulants, and hand-rubbing to her legs.

19th.—Pulse 100, scarcely perceptible; respiration 42; temperature 104·3°. Mare worse; sinking fast; extreme debility; tottering gait; breathing much more laboured and abdominal; extremities cold; mucous membranes very pale. Mare has picked her food a little during the night. Sloughing of the mammæ, accompanied by a most fœtid odour, mortification having set in. Gave ammon. carb. ʒiv., gentian, zingib., and cayenne, and repeated same in afternoon. Continued fomentations and liniment, but without any hope of doing good. The mare has a very anxious countenance. *Died* at 6 p.m.

Post-mortem Examination.—Abdominal viscera quite healthy with the exception of a few petechial spots in them. Liver slightly emphysematous, also sub-peritoneal Emphysema. Blood

coagulates but feebly; microscopically examined, it contains large cells, which are furnished with nuclei, and some apparently granular matter. The blood-corpuscles seem broken up and altered in shape. The mammary glands are very hard, the superior portion being quite black. The parts near the teats contain a small quantity of thick, almost inspissated pus. Heart large and flabby. Lungs healthy, but slightly congested. The mare is about three months advanced in pregnancy. The muscles are pale and rather soft. It is probable that Pyæmia took place before death.

FASHION IN THE TREATMENT OF DISEASE.

BY JOHN GERRARD, M.R.C.V.S., MARKET DEEPING.

THE subject of "bleeding" in inflammatory disorders, and the influence of fashion thereon, raised by Mr. C. Gresswell, M.R.C.V.S., of Nottingham, in the October and November numbers of a contemporary journal, is an old and very important subject; indeed, it is coeval with the birth of medicine and surgery.

Podalirius enjoys the distinction of being reputed the first of phlebotomists, and probably the most successful, from his time (B.C. 1192) to this. He having opened a vein in either arm of the King of Caria's daughter, who had been severely injured by a fall from the housetop, was rewarded by her hand after her recovery, and presented by her munificent father with the Chersonese as her dowry. Whether Mr. Gresswell may have any intention of rivalling Podalirius, and securing the hand of a fair daughter of some wealthy Lincolnshire squire, in return for saving the life of his favourite but plethoric steed by timely abstraction of blood, we are unable to conjecture; but he certainly bids fair to revive the practice which, according to his showing, has almost gone out of fashion.

It would have been well for Mr. Gresswell, before making this sweeping charge of intellectual toadyism against the profession to have examined rather more closely than he seems to have done, the premises on which such a conclusion is based.

True it is, that the practice of blood-letting and the employment of other antiphlogistics have greatly declined within the last quarter of a century; but to attribute the cause of the change to blind and unreasoning fashion is paying but a poor compliment to the intelligence of the age. But that phlebotomy has altogether disappeared as a therapeutic measure, we have only to refer to the current literature of the sister science, as well as that of our own, in order to disprove the allegation. Aitken, in his "Science and Practice of Medicine," says that "the most important and the most efficient of remedial agents for inflammation is undoubtedly *blood-letting;* while it must at the same time be remembered that it is not every case of inflammation that requires or warrants the abstraction of blood. It is a spoliative remedy, powerful for good and for evil." Dr. Watson says, "Each case requires its special study, speaks its proper language, furnishes its peculiar indications, and reads its own lessons, and we should bleed so as to secure the advantages of the remedy and to avoid its disadvantages."

Professor Williams, in his "Principles and Practice of Veterinary Surgery," the most systematic, scientific, and practical work on the subject in the English language, after giving a brief *résumé* of the views of both schools of therapeutics, says, "I must confess that I can neither assent to the views of the extreme antiphlogistics nor to those of the writers who condemn bleeding altogether—being quite confident that I have seen many cases of inflammatory disease cut short by a *timely abstraction of blood.*" Surely Mr. Gresswell will not try to maintain that these authorities are influenced in their reasoning or their practice by fashion, or that they are the victims of that unity which he so much decries and sighs to be delivered from, as such a *levelling* and demoralising principle. But, indeed, it is not among the grandees of medical science alone that the practice of bleeding prevails. It has a far larger hold among the practitioners of veterinary medicine than Mr. Gresswell would have us believe, unless his experience of Lincolnshire practitioners is very different from mine.

Some two years ago I was attending a farmer's team of about ten horses, ill from what is usually known as Influenza. Four

of them were suffering from *Pneumonia* of an asthenic type, with a great tendency to serous effusion into the pleural sacs. Treating them on the analeptic principle, by supporting the strength and salines, the owner was dissatisfied with their progress, and thought he would like another opinion. To this I had not the slightest objection, and accordingly a member from a large town was called in. It is wonderful the effect produced on the vulgar mind by a practitioner from a large town, especially if it should be a good distance off, and even though he should be a mere *old fogey*, of the heroic school. This worthy appeared, and his time being too precious, I was not privileged to meet him ; but he condemned my treatment, although he never knew what it was, and said, "They should have been all *bled* and well blistered."

Bleeding and blistering for the Pneumonia of Influenza! I was not prepared for such a return to the antiphlogistic remedies, and thought we had escaped from such relics of barbarism ; but it would seem they still linger amongst us, when even such an intelligent practitioner as Mr. Gresswell takes the field as their champion. And even from the plebeian to the peer, the idea of bleeding for inflammation in men and animals is still regarded as the orthodox doctrine, although a few may have imbibed the heterodox.

Notwithstanding the blind credulity of the public in medical matters, as indicated by their adhering to the exploded theories of the antiphlogistic school, I cannot believe that the "majority of medical practitioners and many veterinary surgeons do not have recourse to bleeding, because it is currently held to be incorrect and not fashionable." On the contrary, I believe it to be from the superior knowledge of physiological, pathological, and therapeutical laws possessed by the practitioners of medicine of the present day,—in short, that our art is more fully under the control of reason.

Diagnosis is daily becoming less and less conjectural ; instead of guessing at what was probably the matter, we now, by microscope, test-tube, and other appliances, often determine with certainty what exists.

To imagine that, when an over-fed horse, after being worked

or moved a little beyond his pace, and thus thrown into a state of excitement or fever, always requires the aid of art, is an error; and it is an assumption to suppose—judging from the nature and course of uncomplicated Pneumonia in the horse—that abstraction of blood, and the use of what has long been known as sedatives, are necessary to a cure.

Observing that Mr. Gresswell courts criticism, it will be unnecessary to offer any apology for looking a little more closely at his cogitations, to see if we cannot find in them the very reason for the practice he commends, but which he condemns in others—viz., fashion or custom.

"A heavy, plethoric cart-horse, after a hard day's work, is found at night 'blowing' very hard, cold in the extremities, mucous membranes purple, and the pulse imperceptible. Bled to the amount of one gallon, gave sedatives and febrifuges, and in twelve hours he was convalescent." Heroic, but successful treatment, surely! How was it accomplished? By the timely abstraction of blood, thereby relieving the pressure on the pulmonary vessels, and the engorgement of the great veins and right side of the heart. But not so, says Mr. Gresswell; for, "the circulation thus freed, the heart by its reaction would soon have burdened the lungs again, but the sedatives—digitalis and antimony—came into play, and stayed its action." Did they? and if so, how did they do it? Here we find the effects of fashion or custom cropping out unconsciously; for it is proved beyond a doubt that antimony, in any of its forms, has no effect on the heart's action in the horse or ox, and consequently could have no effect in this case. (See "Veterinary Medicines," by Finlay Dun.) The action of digitalis is very uncertain, and scarcely determined. Indeed, it is more of a stimulant than a sedative to the heart. Burness and Mavor, in their "Specific Action of Drugs," state that "it is difficult to say what the exact physiological action of this drug is;" and the only action they noted in a colt to which it was given, was "*erection of the penis.*" So that we thus dispose of two of the factors which Mr. Gresswell considers contributed to the solution of the problem of disease, as being *nil* in their action; and there only remain the febrifuges which, unfortunately, he does not tell us the composition of.

It is highly probable that the febrifuges, if of a stimulating nature, may have contributed to the relief of the Pulmonary Apoplexy, which I conceive the case to have been; and that, if allowed a little time, they might have accomplished all that was necessary without the bleeding,—which, however, always affords relief when the symptoms of dyspnœa are very urgent. And that such was essentially the case, is further evident from the relief it afforded to the pulse, which in these instances is always indistinct, with tumultuous action of the heart.

"The amount of blood in this horse's lungs must have been excessive; and Nature," says Mr. Gresswell, "no doubt, in the first instance, by increasing the action of the heart, had done her utmost to remove the obstruction, but had failed." This sentence raises the most important question in connection with the subject,—viz., the cause of the obstruction which "Nature had ineffectually tried to remove."

The explanations of Mr. Gresswell in this matter may be regarded as having somewhat the character of "Paley's Evidences"—"raising more questions than they answer." It is clear, from this case, as also from the explanations offered for the practice he advocates, that he regards the plethoric state, or, as he says, "when the system is surcharged with blood," as *the cause* of inflammation: or, "when that excess of blood undergoes inflammatory change."

Such a state of system may, and undoubtedly does, occur, when an animal has a full diet, little exercise, and the digestive process is in perfect condition; but that it precedes all active inflammation, or is followed or can be produced by it, we take the liberty to doubt, and even disbelieve. It is a notorious fact that many animals will partake of an excessive quantity of food for a considerable time, have no exercise, and still remain in health—showing not the least tendency to inflammatory disorders. The excess of nutriment is stored up as fat among the various tissues and organs of the body.

Even in herbivora, according to Prof. Voit, and more recently confirmed by Messrs. Lawes and Gilbert, the nitrogenous or albuminous constituents of the food are probably the chief, if not the only source of fat. The unappropriated nitrogenous

elements, instead of giving rise to inflammatory diseases, are excreted by the kidneys in the shape of urea, or if retained in the system from functional inactivity of any of the excretory organs, different phenomena are observable than that known as inflammation.

Animals, however, which have been highly fed and little exercised, are certain to suffer from deterioration of their tissues by a kind of *fatty infiltration,* which renders them extremely liable to congestive and apoplectic attacks of the lungs and liver, often mistaken for inflammation, and best treated by blood-letting, regular exercise, and a reduced diet.

Entire cart-horses, in which Mr. Gresswell truly says "disease runs its course very rapidly," generally fall victims to this *fatty infiltration;* also the oil-cake-fed horse, not unfrequently after changing owners.

And how is this brought about? By a simple and certain physiological process, through which the fat is deposited within the cells of the various tissues, where it displaces and obscures the nuclei and protoplasm, but does not destroy them; and in the case of the muscular tissue seriously interferes with its proper condition and tone.

Recent observations tend to show that the stasis of inflammation is due to some alteration in the properties of the walls of the blood-vessels through which the blood passes, and not to changes in the blood itself.

Professor Lister considers that the accumulation of the red corpuscles in the inflamed part, and their adhesion to one another and to the walls of the vessels, is owing to their natural tendency to cohere together when in abnormal circumstances, such as often occur after their removal from the body; and he says that this tendency is not greater in the blood of inflamed tissues than in normal blood.

Now, Mr. Gresswell's cogitations tend to show that the primary cause of inflammation is in the blood itself, and he says that we should bleed in "plethora before the *excess* of blood undergoes inflammatory change, and also when the blood has localised itself into an active congestion or inflammation;" and even in specific fevers he recommends it "to weaken and dilute

the poison." This seems to me a most extraordinary doctrine to preach and practise in the latter part of the nineteenth century.

It opens up a very large question, however; and as the inexorable 15th is close at hand, I must forbear.

In conclusion, I may say that, notwithstanding the misty nature of Mr. Gresswell's pathological ideas, he seems to have been wonderfully successful in practice—which is after all, perhaps, "the best test of merit." It might be well for him to inquire if the six cases he relates bear out his premises, if they might not have been as successfully treated without the bleeding, and if the proportion of cures effected by the unfashionable practitioners of the present day will not compare favourably with that noted when bleeding was regarded as the *sheet-anchor* in the treatment of all diseases. He will probably find, if he examine impartially, that the principle or motive which has inaugurated or is effecting the change, is neither fashion, unity, nor the want of it, but the enlightened teachings of an advancing philosophy, which men engaged in a noble calling are unable to resist.

CONTAGIOUS PLEURO-PNEUMONIA IN HOLLAND.—Under the heading of "State Medicine," in the Dutch Budget for 1878, it is stated that, although the results attending the compulsory slaughter of cattle suffering from Pleuro-pneumonia are as yet incompletely manifest, there can be no doubt that a rigid enforcement of existing regulations will ultimately prove as successful in this disease as in the case of Rinderpest. In Friesland the systematic slaughter of all affected beasts has gradually so far reduced the evil, that at the present time there is but one infected herd in the province. Altogether, 27 suspected herds, comprising 769 head of cattle, have been slaughtered there. In South Holland the regulations could not be so strictly enforced, owing to the grant of money made for the purpose in the second half of the year being insufficient to provide for the compensation of owners whose beasts should have been killed. Only in the neighbourhood of the Rhine and south of the Meuse has the plan been strictly and thoroughly carried out; and in these parts it is stated there is not a single suspicious case left. In the first six months of the year, 62 herds, including 1149 cattle, were slaughtered in South Holland, and 19 herds, numbering 170 head of cattle, in the North. The total sum paid for compensation in six provinces for the first half of 1877, after deducting the amount received for hides and flesh sold under proper supervision, was 312,815 florins. The hides and flesh sold realized 151,495 florins.

Editorial.

THE OUTBREAK OF RABIES CANINA IN ENGLAND.

THERE does not appear to be much diminution in the panic or alarm, or the cause which gave rise to it, since the last issue of the *Veterinary Journal;* and it does not appear likely that this will take place until the public is assured that proper measures are adopted to prevent the extension of Rabies, and to protect persons from injury by rabid dogs. These panics are almost periodical, and it is only after much loss of property has been sustained, and great alarm experienced from the number of deaths reported as due to Hydrophobia, that steps are taken to mitigate the evil. No sooner has this been done than the necessary measures are relaxed or abolished, and nothing more is thought about it until the disease presses into notice again. Though the malady is always in existence in some part or parts of the country, yet there are no permanent precautionary measures in force ; and even when a serious outbreak occurs, there is no uniform action adopted, but disjointed, partial, irregular, and not unfrequently ill-advised or inefficient preventive or suppressive measures, as with other contagious diseases of animals. Though there is great reason to deplore the grave consequences that have attended the epizoöty which has now been prevailing for several years, yet if the outbreak leads to the adoption of anything like effective sanitary police measures for this and similar animal contagions, the loss and alarm will not have been in vain. If it also compels attention to the value of Comparative Pathology and Veterinary Science, and to the unpardonable neglect of these in this country, much good will have been effected; as surely some attempt will be made to put them on a proper footing, and to obtain from them those important benefits which they can bestow on the community. For many years we have repeatedly had occasion to allude to this neglect ; and in one of the leading articles which appeared in this Journal towards the middle of last year, we insisted on Comparative Pathology, which they are not taught, being more necessary in the education of medical men than Comparative Anatomy, which they are taught. We pointed out that in all, or nearly all, the Continental universities, there are Chairs of Comparative Pathology, which are occupied by the best veterinarians their respective countries could produce. Nothing could better illustrate the need there is for this branch of medical science being recognised in Britain, than the loose—nay, wild—writing which has appeared in the public press with regard to Rabies and Hydrophobia. It would seem that more liberties can be taken with this disease than with any other which affects man or beast ; and if one may judge from what is written concerning it, but few persons of the very many who venture to air their opinions know anything of it or its literature. Some of the persons who evidently have but little faith in the knowledge of medical men, are inclined to attribute the deaths which have been put down as due to Hydrophobia, to fear, or to Tetanus. But surely the surgeons and physicians who have seen these cases, and who have also witnessed the variable effects of fear, as

well as the symptoms of Tetanus, are in a better position to diagnose Hydrophobia than laymen who have had no experience whatever in these diseases or conditions!

It cannot but be a matter for congratulation, that the urgent need which we have so many times insisted upon for the founding of Chairs of Comparative Pathology at our medical schools, has at last been recognised, and that Oxford is likely to take the lead in this matter—as is evidenced in our correspondence columns. We anticipate great benefit from this recognition; and if it brings human and veterinary medicine into closer contact and relationship than has hitherto unfortunately been the case, we shall have had ample reason to think that our anxious labour has not been in vain. The two branches of medicine are naturally so intimately related to each other, that nothing but harm can result to both when they are kept so wide apart as they always have been in this country. In other respects, we are also pleased to observe that the present serious visitation of Rabies and Hydrophobia is not an unmitigated evil, for it has drawn attention to the value of veterinary sanitary science, and has led to the appreciation of the good sound work done in this division of State medicine by members of our profession. It has been far too much the custom to keep veterinarians in the background, even in their own special department; and only too frequently not only have their labours been ignored, but they have been appropriated by others, with scant acknowledgment, or no acknowledgment at all.

In investigating Rabies, veterinarians have left little to be done by others, and especially with regard to its transmissibility, symptomatology, lesions, and prevention. This, we fear, is sometimes overlooked, and the present outbreak is no exception.

We learn that the Committee of Council of the British Medical Association have appointed a committee of inquiry to organise an investigation of the causation, pathology, and treatment of Rabies and Hydrophobia. This committee is composed exclusively of medical men: no member of our profession appears in the list, though we are informed that the aid of veterinary surgeons will be invoked if they can be of service. We do not complain of this omission; medical men, no doubt, consider themselves perfectly competent to undertake an investigation of this kind without extraneous assistance, and if veterinary science can supply any information, this will be utilized to the advantage and credit of medical science. Remembering the extremely subordinate—indeed, degrading—position our profession was induced to accept on the Cattle Plague Royal Commission in 1866, when medical men, who knew nothing whatever of the malady, formed the majority, we need not be surprised that, unless enlightened views prevail, the same position should always be allotted us. Remembering, also, the trifling value of the Report of that Commission, and also that scarcely anything was added to the knowledge of Cattle Plague we already possessed—knowledge entirely due to the labours of veterinarians—we have cause to regret that the promised investigation is not marked by more liberal and unselfish motives. No possible good can come of ignoring the existence of veterinary medicine: the time for this has passed away,—it prevailed too

long. In other countries there exists a juster appreciation of its value and benefits.

But, indeed, we have every reason to think that the day is not far distant when this branch of medicine will receive the attention and appreciation it merits in Britain, and particularly from the medical profession. Various indications lead to this belief, and more particularly those which the medical press afford. For instance, the *Medical Examiner* of November 15th, in a well-written article on "Comparative Pathology and Medicine," in alluding to the advantages the student of these possesses in investigations into pathological processes, and the benefits they may confer on human medicine, remarks: "It is in the domain of preventive medicine, however, that we have most to expect from veterinary medicine. Here the scientist is not only able to indicate the measures necessary for the suppression of disease, but can get legislative authority for enforcing them. From knowledge gained in this department we shall be able to apply the remedies necessary for the prevention of human diseases.

"Many of the grandest achievements in physiology, pathology, and therapeutics have been gained in the sphere of the veterinary physician by students and practitioners of human medicine. The more advanced position of human medical science explained this anomaly in former times. But now veterinary medicine has developed from the empirical to the scientific stage, and the veterinary profession will be expected to contribute more and more to the knowledge of our science and art. The training of the veterinary practitioner is daily becoming more comprehensive and more careful, and the fruits of this are seen in the rapid advances of veterinary science, and in the culture of those engaged in veterinary medicine and surgery. *Veterinary literature has made enormous progress during the last few years, and the most brilliant future may be predicted for it.* Now that veterinary medicine is established on a scientific basis, the time has come when the bonds which unite the students and practitioners of human and veterinary medicine should be knit more closely, and the two branches be brought into more intimate relationship. Human and veterinary medicine are progressing along the path of knowledge, but they are separated from one another. Fellow-travellers along the steep and rugged course, they should advance hand in hand, helping each other to surmount the obstacles they will have to encounter on the way. Each has much to learn of the other. Whilst the objective side of disease is sometimes studied to the greatest advantage in animals, the subjective can be investigated in man alone. It is, therefore, no less necessary for the veterinary physician to have a knowledge of disease in man, than it is advantageous for the practitioner of human medicine to study diseased processes in the lower animals."

Some attention has been given to the beneficial action of curare or woorali in the treatment of Rabies in man; and the two cases in which it was beneficially employed, the report of which in this country first appeared in the *Veterinary Journal*, lead to the hope that this intensely active agent may prove serviceable in allaying one of the most distressing symptoms in the human being. Well, even the credit of first

suggesting this medicament for the treatment of Hydrophobia cannot be withheld from us. Years ago, according to Waterton, the distinguished naturalist, the veterinary professor Sewell is reported to have asserted, in the presence of Sir Joseph Banks and a large number of scientific men, that if he chanced to be inoculated by a rabid dog, and became affected with the disease, he would not delay a moment in applying the woorali poison, confident as he was that its application would prove successful in preserving his life.

We earnestly hope that, when more is known of Comparative Pathology in this country, the value of the labours of veterinarians will be more generally recognised. In the meantime, we fear that we shall have to chronicle the prevalence of Rabies, until those sanitary measures which we were the first to indicate are inaugurated. The loss of human life from Hydrophobia threatens this year to be greater than it ever has been in England, if we are to judge from what it has already been in London. Since the beginning of the year up to November 10th, the deaths from this dread disease in the Metropolis were fifteen, while the corrected average annual number during the past ten years was only four. And this through sheer neglect of the teachings of veterinary sanitary science!

PRIZE ESSAY COMPETITION FOR INDIA.

WE have often had occasion to refer with deep regret to the absence of encouragement in promoting veterinary science, both in this country and in India. The work which has been already accomplished has been solely and entirely the result of individual effort, and whatever benefit has been derived from this has received no reward or acknowledgment in return for the toil, expense, and other sacrifices which the unfortunate enthusiasts may have made in promoting a most useful and humane branch of human knowledge and national well-being. Hence it is that labourers in the field of veterinary medicine have been few and far between, and the amount of original research and scientific work achieved all but *nil;* while what may be termed "professional literature"—in contradistinction to that which is so abundantly produced for the instruction of amateurs in animal doctoring—is meagre in the extreme. At the veterinary schools there is, of course, plenty of incentive to the acquirement of elementary knowledge, and inducement for students to join these teaching establishments. But for those who have graduated, and who possess the ability to advance their science, there is no stimulus, no inducement to work for the public benefit,—nothing whatever to afford compensation in the slightest degree for the oftentimes heavy demands which such labours exact. The veterinary profession itself is not blameless for this state of affairs. Perhaps it is the only profession in this country which withholds its countenance and encouragement from those of its own members who endeavour to promote its interests, and who "spurn delights and live laborious days" in raising it from obscurity into light. Nay, there is only too much reason to suspect that in more quarters than one such efforts are looked upon with disfavour and jealousy, and attempts made to thwart or minimise them to the lowest degree. Contrast our position with that of the sister profession, and it will at once be obvious why our progress is so slow and unsatisfactory. Until we have learned to be liberal and generous

towards those of our number who exert themselves continuously and disinterestedly for the general good, and begin to appreciate their efforts, we shall not, dare not, expect any great change for the better. He who would labour for the improvement of veterinary medicine in this country must be prepared to make large sacrifices in health and wealth, and have nothing in return but the consciousness of doing his duty. So long as we are apathetic in encouraging our own colleagues, we can scarcely hope for encouragement from external sources. On the Continent, Governments and agricultural and other societies readily and handsomely acknowledge the services of veterinarians, and offer inducements for research. Consequently, in these countries veterinary science is on a much better footing, and renders more benefit than in our own, which should certainly, looking at its immense animal wealth and the wide extent of the earth's surface it rules over, have a greater interest in promoting this science than any other country.

These remarks have been prompted by the announcement that the Principal Veterinary Surgeon in Bengal, Mr. F. F. Collins, has determined to offer prizes for essays on subjects relating to veterinary medicine in India. While we gladly accord him our full meed of praise for his excellent intentions and generous offer, we cannot help asking why he should be allowed, from the scanty pay he receives, to expend a portion of it on what is essentially a public service? Surely it must be to the direct advantage of India and the Indian Government to obtain information such as these prizes are intended to elicit, and to encourage the investigation of the diseases and accidents peculiar to the domestic animals in India. As in England, so in India: nothing has been done by Government to induce those who are most competent to promote knowledge of this kind, and therefore it is that we are so little acquainted with the maladies which are special to our great Indian possessions, and affect so many more species of animals than we have to deal with in this country. As in England, all is left to individual effort, and this receives no encouragement. How differently the French have acted in Algeria, their largest foreign possession! There the Government has conferred decorations, medals, and money awards on veterinary surgeons for essays and monographs on subjects of importance to the colony; and there can be no question as to the benefits which have been derived from this enlightened course. We have more exact information as to the diseases of animals in Algeria than we have of those in India, and some of the monographs on them might be designated classical. There can be no doubt whatever that English army veterinarians would have been as anxious and as willing, if not as competent, as their French brethren, to undertake inquiries of this kind, had there been any inducement; but for years there has been nothing to labour for, and the earnest worker felt that at the end of his service he would be no further forward than the idle or indifferent,—all were kept on the same dead level of mediocrity. Until a change is effected, we must still rely on the efforts of those who are ready to make sacrifices of themselves or their private means, or both, in furthering the public interests without expectation or hope of recognition or reward. The veterinary profession can furnish some instances of these self-denying men, and through them some progress has been effected. We trust Mr. Collins' attempt may be attended with success. It is the only satisfaction he is likely to receive, and perhaps it is the highest he would seek. The notice of prizes is issued from Simla, under date October 1877, and is in the following terms:—

"The Principal Veterinary Surgeon, Bengal army, will give two prizes—one of two hundred and one of one hundred rupees—for the two best practical and original papers upon the following subjects:—

"1. The best method of stable management of Troop Horses in India.

"2. The diseases and accidents to which Troop Horses in India are

liable, from irregularities in digestion : their intrinsic and extrinsic causes, and the best available mode of preventing them.

"The minutest details of the subjects must be based upon the recognised laws of the science of physiology.

"CONDITIONS.

"1. Competition will be open.

"2. Papers must reach the Principal Veterinary Surgeon's Office, Simla, India, before the 1st October, 1878.

"3. A sealed envelope, with the competitor's name and address enclosed, and his 'nom de plume,' or motto written upon the outside, must accompany each paper.

"4. The respective merits of the papers will be decided by two competent judges.

"5. The two prize papers to become the property of the Principal Veterinary Surgeon ; the others will be returned.

"6. Should none of the papers possess sufficient merit, one or both prizes will be withheld."

GLANDERS AND FARCY IN INDIA.

THE geographical distribution of the contagious diseases of animals always possesses a peculiar interest for the comparative pathologist and veterinary sanitarian, and a knowledge of the subject is sometimes of the highest importance. We are still in some doubt as to the extent to which Glanders prevails, geographically, notwithstanding our own personal researches and inquiries ; but it appears an established fact that the malady is unknown in some parts of the world—as in Australia and New Zealand ; though in all probability, if once introduced there by imported diseased solipeds, it will soon make its presence widely and permanently felt : as occurred in Mexico, when the United States cavalry carried it into that country. Until quite recently, several authorities were led to believe that the malady did not exist in our Indian possessions ; but there is now ample evidence to prove that it is well known there, and that it is sometimes quite as dangerous and destructive as in England. Not long ago we had to record an outbreak among the horses of one of our cavalry regiments there, which was accompanied by serious loss. To Mr. F. F. Collins, Principal Veterinary Surgeon in India, we are indebted for the annexed table, showing the mortality from this disease at various stations in the Bengal Presidency from January, 1872. In a private letter written last March, Mr. Collins announces that he had stamped out the disease among the horses of the 11th Hussars, thirteen of which had to be shot. "The disease exhibited itself in a form I never before witnessed. It generally commenced with inflammatory tumours upon the ribs, which after a few days subsided, leaving a slight swelling, which was more or less painful when pressed upon. Nothing more would be observed for weeks, when suddenly a hind-leg would swell, and irregular Farcy buds appear, or a discharge from one or both nostrils would manifest itself. From the earliest period until decided symptoms of the disease were developed, the interval varied from two to six months. I attended nearly all the *post-mortem* examinations, and with only one exception tubercular deposits were present in the lungs ; in the exceptional instance I found nothing beyond similar tubercular deposits in the liver. I noticed an analogous condition to the last, some years ago, in a horse of the 5th Lancers at Aldershot, when that regiment had Glanders firmly fixed in it."

RETURN OF HORSES AND GRASS-CUTTERS' PONIES, CONNECTED WITH THE MOUNTED BRANCHES OF THE SERVICE, DIED OR DESTROYED FOR FARCY OR GLANDERS, SINCE THE FIRST OF JANUARY, IN THE BENGAL PRESIDENCY.

STATIONS.	1872.		1873.		1874.		1875.		1876.		1877.		TOTAL.		REMARKS.
	Horses.	Grass-Cutters' Ponies.	Horses.	G.-C.s' Ponies.	Horses.	G.-C.s' Ponies.	Horses.	G.-C.s' Ponies.	Horses.	G.-C.s' Ponies.	Horses.	G.-C.s' Ponies.	Horses.	G.-C.s' Ponies.	
Agra	..	..	..	..	..	..	3	2	..	..	..	..	3	2	Reported to have been introduced by grass-cutters' ponies.
Allahabad	2	..	..	..	2	..	..	..	..	..	..	..	4	..	Introduced by horse arriving off furlough.
Barrackpore	8	..	5	2	9	..	2	8	..	..	4	..	28	10	Reported to have been in the neighbourhood. Horses diseased driven about Calcutta.
Bareilly	..	..	..	..	16	10	..	..	..	..	..	..	16	10	Introduced by grass-cutters' ponies when on march from Peshawur to Bareilly.
Benares	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Campbellpore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Cawnpore	..	..	..	..	10	..	..	..	..	..	..	..	10	..	Reported in the neighbourhood. One private horse diseased.
Dinapore	..	..	..	..	..	..	1	..	..	..	..	..	1	..	Not stated how introduced.
Ferozepore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Fort Machison	..	..	..	..	..	..	1	..	..	..	2	..	3	..	Not stated.
Fyzabad	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Jhelum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Jullundur	..	..	..	..	..	..	..	..	..	..	..	3	..	3	Reported in the city. One pony purchased in the city, two
Jutogh	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Hill stations. [at Umritsur fair.
Khyragully	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Hill station.
Lucknow	..	1	..	..	5	..	5	..	..	..	..	..	10	1	Not stated.
Mean Meer	..	..	2	..	1	..	..	..	4	..	..	..	7	..	Two of these horses had been on furlough.
Meerut	9	12	7	..	9	..	12	3	4	..	..	..	41	15	A village pony destroyed on road to Delhi; had come from
Mooltan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	[Bareilly.
Morar	..	..	..	..	..	..	1	..	1	..	..	..	2	..	One case occurred after camp at Delhi.
Muttra	..	..	..	..	2	..	..	..	11	5	1	1	14	6	Introduced by horse from Agra, and grass-cutters' ponies.
Nowgong	..	..	..	..	..	..	1	7	..	..	..	..	1	7	In the neighbourhood. A remount from Jhung fair.
Nowshera	..	..	..	..	..	..	..	..	..	..	2	1	2	1	Glanders met with on the Grand Trunk road, and common about Peshawur. Twenty-four horses reported destroyed at Thackpal in Peshawur.
Peshawur	..	..	..	..	1	1	..	..	1	..	..	..	2	1	Very common about Peshawur.
Rawul Pindi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Saugor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Sealkote	6	..	..	..	..	..	..	..	1	1	1	..	8	1	Not stated.
Segowlie	2	..	..	..	..	..	..	..	..	..	..	..	2	..	Not stated.
Seetapore	2	..	1	..	2	..	..	..	..	..	..	..	5	..	Not stated.
Umballa	1	..	..	..	2	1	4	..	12	5	6	1	25	7	Three ponies in Sudder Bazar destroyed. The disease reported to have existed among the Dâk horses. The first case showed the disease after the camp at Delhi, in the 11th Hussars.
TOTAL Horses	30	..	15	..	59	..	30	..	34	..	16	..	184	..	
TOTAL Ponies	..	13	..	2	..	12	..	20	..	11	..	6	..	64	
GRAND TOTAL													248		

SIMLA, *12th Sept.*, 1877.

DISEASES AND ACCIDENTS AMONG THE HORSES OF THE BRITISH ARMY, AT HOME AND IN BENGAL.

FOR the first time in the history of the army, we believe, we are enabled, through the courtesy of the Principal Veterinary Surgeon, to publish the number of cases of disease and accidents occurring among troop horses in the three kingdoms, during the year commencing April 1st, 1876, and terminating March 31st, 1877. Only one case of Glanders was reported during the year. Class 13, which contains the largest number of cases, is that allotted to accidents, and those special casualties to which troop horses are more particularly exposed, either from the nature of their work, or the manner in which they are located either in barracks or camp. Deducting the 299 remaining at the end of the preceding year, it will be seen that the admissions, in an effective of more than 15,000 troopers, were 7604. Of the total number, 6336 were cured, 710 relieved, 208 were deemed incurable, 146 died, and 110 were destroyed. From the evidence before us, with regard to the sanitary condition of the horses in the armies of other countries, we have reason to believe that of our own army compares most favourably.

Classes.	Remaining from last Half-yearly Return.	Admitted since.	Total.	Cured.	Relieved.	Incurable.	Died.	Destroyed.	Remaining under Treatment.	Total.
1. Fevers	10	271	281	266	6	...	4	...	5	281
2. Lungs and pleura	7	98	105	45	5	23	27	2	3	105
3. Air passages	28	761	789	731	22	13	3	3	17	789
4. Heart	...	11	11	...	...	1	10	...	...	11
5. Liver and spleen	...	4	4	3	...	...	1	...	...	4
6. Stomach, intestines, etc.	3	337	340	284	5	...	50	1	...	340
7. Kidneys and bladder	1	3	4	2	1	...	1	...	...	4
8. Specific	16	504	520	410	59	13	14	5	19	520
9. Brain, spinal cord, etc.	1	46	47	5	11	15	6	10	...	47
10. The eye	4	87	91	69	18	3	...	...	1	91
11. The skin	7	151	158	134	13	1	...	...	10	158
12. The foot	38	551	589	313	189	58	1	...	28	589
13. Various	178	4619	4797	4047	369	77	14	83	207	4797
14. Not in above	6	61	67	27	12	4	15	6	3	67
Total	299	7504	7803	6336	710	208	146	110	293	7803

Number of horses at last return, 15,061 troop ; 1698 officers'.
,, ,, present time 15,107 ,, 1672 ,,
Average price of cast horses, £18 8s. 4¼d.

Mr. F. F. Collins, Principal Veterinary Surgeon in the Bengal Presidency, reports to us that the per-centage of deaths among the horses from all causes during last year in the lower circle of Bengal was 0·97, and in the upper circle 1·32. This was the lowest per-centage known for many years. Mr. Collins writes: "I have operated upon a great many horses during the past twelve months for diseased testes. There was one really frightful case,—immense thickening of the integument, with Hydrocele. I find, strange to say, that

when I perform the covered operation—owing to adhesions, etc.—on one side, and the uncovered operation on the other, the former does the best, and is soonest well. This is invariably the case, and I feel bothered to account for it."

HYDROPHOBIA FROM POST-MORTEM INOCULATION.

THE extreme infrequency of Hydrophobia resulting from *post-mortem* inoculation has given rise to the opinion that the rabific virus loses its potency with the death of the rabid animal. We have only been able to discover two well-authenticated instances in which the disease has followed accidental inoculation, produced while making an examination of the bodies of dogs which had perished from Rabies. In both cases the victims were members of the veterinary profession—one at Copenhagen, the other in Germany. We confess to a certain amount of uneasiness we experienced not long ago, when, after making a careful autopsy of a dog which had died of the "dumb" form of Rabies, and the carcase of which was yet warm when the examination was commenced, we discovered a fresh wound at the root of the nail of one of our fingers—these two cases being vividly brought to our recollection on looking at the abrasion. It is impossible to make a proper examination of a dog without soiling the hands (unless they are protected by gloves), and in disarticulating the lower jaw for the examination of the pharynx and larynx, they are generally covered with saliva.

That the malady may be transmitted by the virus from a dead animal, has quite recently received another illustration in the case of M. Moreau, a veterinary surgeon of La Capelle, Aisne, France. In last July, M. Moreau was sent for to Lerzy, to examine the body of a dog which was supposed to have been affected with Rabies; and he did so, forgetting that he had a slight abrasion on one of his hands. In the last week of October he began to exhibit the early symptoms of Hydrophobia, which he soon recognised. Doctor Mennesson attended him during the course of the disease, but no remedies or appliances afforded relief. The unfortunate man retained consciousness until the last, and his self-possession never deserted him. He implored his attendants not to inspire his breath, and shortly before he died he bade farewell to his wife and child.

Such an occurrence is a warning to veterinary surgeons who may have to examine the bodies of rabid or suspected animals, and every precaution should be adopted to prevent accidents.

FURTHER NOTES OF EXPERIMENTS AT THE BROWN INSTITUTION ON THE COMMUNICATION OF FOOT-AND-MOUTH DISEASE FROM DISEASED TO HEALTHY ANIMALS.

BY W. DUGUID, M.R.C.V.S., VETERINARY SURGEON TO THE INSTITUTION.

IN a report already published in the *Journal of the Royal Agricultural Society*,* Dr. Sanderson gave an account of some preliminary experiments on Foot-and-mouth Disease, which appeared to show that under certain circumstances its communication by mediate contagion is more difficult than is usually supposed. In the experiments in question the infecting material was obtained at Deptford, either from live animals or (in one case) from an animal just slaughtered. In all these cases the appearances of the disease

* Already referred to in the *Veterinary Journal*.

were so characteristic that, although nothing was known of the previous history of the cases, no doubt could be entertained of their nature.

Opportunities have since offered themselves for repeating the most important of these observations, particularly those relating to the infecting power of the discharge from the mouth. For this purpose material was obtained, not from infected cattle just imported from the Continent, but from animals in the Metropolitan Cattle Market, reported by the inspector as affected with Foot-and-mouth Disease.

As before, three of the experimental animals at the Brown Institution were fed, February 1st, 1877, with hay which was more or less soaked with the discharge from the mouths of the diseased animals. Subsequently, March 22nd, a fourth animal was treated in a similar manner. All of these acquired Foot-and-mouth Disease—the time of incubation in the several cases being thirty-six hours, two days, two days, and three days, the first indication of the disease being afforded by the increase of bodily temperature. In each case the rise of temperature was followed after one day by the first appearance of the mouth eruption, which, twenty-four hours later, had assumed the vesicular form.

The following table exhibits the progress and duration of the disease :—

Number of Animal.	Temperature.			Eruption.	
	First Rise.	Maximum Reached.	Restoration to Normal.	First Appearance.	Full Development.
I.	48 hours	4th day	7th day	3rd day	4th day
II.	48 ,,	4th ,,	7th ,,	3rd ,,	4th ,,
III.	3rd day	5th ,,	8th ,,	4th ,,	5th ,,
IV.	36 hours	4th ,,	6th ,,	3rd ,,	4th ,,

The times stated in the table are reckoned from the day on which the animals were fed on the soaked hay.

The range of temperature was as follows :—

Number of Animal.	Normal.	First Rise.	Maximum.
	Deg.	Deg.	Deg.
I.	101·99	102·5	104·8
II.	101·99	102·8	105·2
III.	102·0	103·1	105·6
IV.	101·55	102·2	104·5

The restoration of the temperature to the normal standard might be evidently taken in this disease as a good sign of convalescence ; for although at this period the scars on the mucous membranes were very obvious, the animals had already begun to feed and ruminate naturally.

On the sixth day of the disease, in the animal last experimented on, hay soaked with discharge collected from the mouth was given to two other healthy animals (the two three-year-olds), without any effect. It is interesting to notice that, although the stableman who was employed in attending on the diseased animals had charge at the same time of four healthy ones, none of them were affected.

In order to obtain information as to the risk of communication of Foot-and-mouth Disease by litter removed from infected sheds, the bullock No. 4 was littered for eight days (*i.e.* the whole time of illness) with the straw removed twice a day from Nos. 1, 2, and 3, but it did not show any signs of infection. The promptitude with which the same animal was attacked several weeks

after, when fed with soaked hay, proved that this immunity was not dependent on insusceptibility. Finally, the two remaining animals not used in previous experiments were littered in a similar manner with the straw removed from No. 4 during the whole time of its illness, but again without effect.

CONTAGIOUS PLEURO-PNEUMONIA OF CATTLE.

IN the last number of the *Veterinary Journal*, we gave the report of a sub-committee of the Dublin Sanitary Association, in which the conclusion was arrived at that the flesh of cattle suffering from Contagious Pleuro-pneumonia should not be used as human food. Another report, by Drs. Macnamara, MacAlister, and Reynolds—all eminent members of the medical profession in Ireland—has been prepared by direction of the Committee of the Irish Cattle Trade Defence Association. From the subjoined portion of this report, it will be seen that the conclusions of the Committee are rather opposed to those of the Sanitary Association. We only quote the sections relating to the use of the flesh as food :—

"THE EFFECTS PRODUCED ON MAN AND HEALTHY ANIMALS BY THE CONSUMPTION OF THE FLESH OF CATTLE AFFECTED WITH PLEURO-PNEUMONIA.—On carnivora in the Zoological Gardens the meat has produced no perceptible effects, and there is no case on record wherein the flesh of cattle slaughtered while suffering from Pleuro-pneumonia, in any stage, has ever been proved to give rise to disease in man. Reynal states that the flesh of animals which have suffered from this disease has been in daily use in Paris for the past twenty years without any appreciable results. Loiset states that, during nineteen years, the flesh of 18,000 diseased animals has been used as food in Lille, and that during that time there were no appreciable alterations in the death rate, nor any unusual accessions of disease.* Mr. Gamgee† states that, in 1862, more than one-fifth of the meat consumed in Edinburgh was that of diseased cattle, and yet that year was not one of unusual mortality. Dr. Greenhow, in the report sent in by him to the President of the Board of Health, in 1857, states,—'I have been unable to ascertain that eating the flesh of animals that have suffered from Pulmonary Murrain produces any injurious consequences on human health' (p. 50). Dr. Druitt, of London (author of 'A System of Surgery'), states that he 'never saw any case of illness arise from eating the meat of diseased animals.' Lévy, in his 'Traité d'Hygiène,' quotes instances of the consumption of similarly diseased cattle on a large scale, with no injurious effect (vol. ii., p. 672) ; and Coze, in the 'Memoirs of the Agricultural Society of Paris' (vol. xx.), gives similar instances of the wholesale consumption of diseased flesh in Strassburg. Huzard and Frank might be quoted also in the same connection.

"Mr. Fleming, in his work on 'Veterinary Sanitary Science,' before quoted, says, in speaking of Pleuro-pneumonia : 'Since the malady has been recognised, it may safely be asserted that the flesh of millions of diseased animals has been consumed as food in every part of the world, and yet there is not, to my knowledge, a single instance of any accident attending or following its use.'‡

"Mr. Gamgee, in an article which he wrote to denounce the sale or use of diseased meat of any kind, admits 'that if a fat bullock or other well-conditioned animal be taken with the disease, it should be slaughtered at once,

* Reynal, "Traité de la Police Sanitaire." Paris, 1873.

† *Edinburgh Veterinary Review*, 1863. A writer in the *Scottish Farmer*, Nov. 19th, 1862, says that one-fourth of the total stock sold in London was diseased in 1862.

‡ Page 443.

and the flesh allowed to be sold at a reduced price.'* 'The absence of evidence is enough to show that immediate ill-effects do not follow the consumption of this meat. Indeed, it is certain that meat of this kind is consumed on so large a scale, that if the meat had been immediately hurtful the consequent mischief could not have escaped observation.'† To this statement of Mr. Gamgee's we would add, that not only have no 'immediate ill effects' followed the consumption of pleuro-pneumonic cattle, but that there is not on record a single case in which *remote* effects have been traced to its use.

"The only statements which have ever been brought forward in support of the injurious effects of the flesh of animals which have been affected with Pleuro-pneumonia are the two following :—

"(A.) In Dr. Livingstone's 'Missionary Travels in South Africa,' 1851, p. 101, he speaks of a disease which affects *horses* and cattle, and which he names Peri-pneumonia, or the 'Horse Plague.' He says, 'The disease passing under the term of Horse Sickness (*Peri-pneumonia*) exists with such virulence over nearly seven degrees of latitude, that no precaution would be sufficient to save these animals. The horse is so liable to this disease, that only by great care in stabling can he be kept anywhere between 20° and 27° S.' 'Cattle, too, are subject to it, but only at intervals of a few, sometimes many, years.' 'When the flesh of animals that have died of this disease is eaten, it causes a malignant carbuncle, which, when it appears over any organ, proves rapidly fatal. This disease attacks wild animals, too ; great numbers of gnus and zebras perish from the same cause.'

"As Pleuro-pneumonia never affects horses,‡ it is obvious that this disease referred to by Livingstone is not the disease in question ; and the only symptom which he gives—namely, frothing at the mouth and nostrils §—characteristic of some forms of the anthracoid disease (a disease widely differing from Pleuro-pneumonia), common in horses and cattle, whose flesh is known to produce the symptoms referred to ; and Fleming, in his work above quoted, regards the African disease as Anthrax.

"Further, Dr. Parkes says : 'I have been informed, on most excellent authority, that the Kaffirs ate their cattle when destroyed by the epidemic lung disease which prevailed at the Cape some years ago, without injury. Both my informants—Staff-Surgeon Nicolson and Assistant-Surgeon Ffrench —made very careful inquiries on this point.'‖ Notwithstanding this clear evidence, even so eminent a man as the late Dr. Parkes was materially influenced, as he admits, by Dr. Livingstone's statements. Had he known, as we do now, that the disease referred to by Livingstone was not Pleuro-pneumonia, there can be little doubt that the direct evidence of his own officers would have had with him its proper weight.

"(B.) In the third detailed report of the Registrar-General for Scotland (1867), an attempt is made, based solely upon the Livingstone fallacy above quoted, to connect a supposed increase of frequency of deaths from Anthrax with the advent of Pleuro-pneumonia. While the Registrar admits that Scotland shows no similar statistical evidence, he quotes figures from the English Registrar to show that the frequency of deaths from Anthrax, in

* *Edinburgh Veterinary Review*, 1862, p. 309.

† *Ibid.* 1863, p. 598.

‡ "The ox tribe alone is subject to the disease."—Gamgee, *Edinburgh Veterinary Review*, 1862, p. 308. "The disease does not extend to other species."—*Fleming*, vol. i., p. 408.

§ "Great numbers also of zebras are found dead with masses of foam at their nostrils, exactly as occurs in the common horse sickness. The production of the malignant carbuncle by the flesh when eaten is another proof of the disease of the tame and wild being identical."—*Livingstone*, op. cit., p. 136.

‖ Dr. Parkes' "Manual of Practical Hygiene," last edition, p. 199.

England, had, within four years, risen from an average of 5·5 to 13 per million of the population, and supposes that, as Dr. Livingstone had found carbuncles to arise from the disease described by him, so this increase in England is due to a similar cause.

"On examining the returns made by the Scottish Registrar-General, the following results appear :—

Year.	Deaths from Anthrax.	Year.	Deaths from Anthrax.
1855	20	1862	19
1856	18	1863	20
1857	18	1866	24
1858	16	1870	25
1859	21	1871	28
1861	20	1872	23

"On comparing these statistics with the relative populations of England and Scotland, the obvious result is, that while, according to Mr. Gamgee and others, the flesh of pleuro-pneumonic cattle was consumed on a large scale in Scotland during these years, yet the average mortality from Anthrax was only in the proportion of seven to the million of the population—about one-half of the English rate of mortality.

"In the year 1872 Pleuro-pneumonia existed in most of the counties of Scotland, yet reference to the table above will show how few were the cases of Anthrax. In 1876, when it existed in twenty-four Scottish counties, and when 404 fresh outbreaks were reported in Scotland alone, the total number of deaths from all cellulo-cutaneous affections, including Anthrax, Erysipelas, and other allied diseases, in the eight large towns in Scotland, was forty-five. In 1874 the disease reached a maximum—the number of cases of Pleuro-pneumonia exceeding that of any other year—yet the corresponding number of deaths from similar diseases was but thirty-three ! In 1875 there were but four deaths from Anthrax in the eight large towns. Thus, the deaths from Anthrax are not in excess, since 1866, of the former average, although we have it on the authority of the Report of the Select Committee of the House of Commons, that Pleuro-pneumonia has been worse, among cattle, since that time than before.

"From all these considerations the following conclusions are warrantable :—

"1. That the consumption of the flesh of cattle, slaughtered in early stages of Pleuro-pneumonia, is perfectly harmless, and the destruction of such meat is a wasteful expenditure of a material which is capable of supplying a perfectly wholesome animal food.

"2. That the cases adduced in evidence of the supposed injurious properties of such meat are of no weight, as those contained in the first statement did not refer to the disease in point, and those in the second are based upon a pure hypothesis, which the quoted statistics overthrow.

"It must also be borne in mind that in this case apposite negative evidence is really the strongest positive evidence ; for while we have proved that meat of the kind referred to has been hitherto largely used in this and other countries, and also that the attention of scientific medical men has been, for many years, directed to the observation of the effect, if any, resulting from its use, the fact that in not one case has disease been traced to the consumption of the flesh of a pleuro-pneumonic animal is really a point of the most significant and conclusive positive value as evidence. This is more especially the case as, in such diseases as Milzbrand, we have precise and positive information of the ill effects of the flesh ; and in the case of the consumption of the decomposed flesh of slaughtered healthy cattle we are also fully in possession of the facts relating to the deleterious effects of such meat. It has been argued that impure water has

been long used by many communities, without the production, in some persons, of injurious results ; and that no scientific person would be found hardy enough to advocate on such grounds the use of such water—and that such is the condition of this question. But the cases are not parallel, because disease *has been* frequently traced with certainty to the use of impure water, which is not the fact with regard to pleuro-pneumonic meat.

"It should also be remembered that, in deciding an important practical point like this, speculative opinions are perfectly worthless, and that positive evidence of cases, such as we have in the instances of Trichinism, Anthrax, or putrid meat, is alone of any value.

"The remarks made above also apply to the fresh and unchanged meat of animals which have been slaughtered in the earlier period of the second stage of the disease, as the negative evidence on this point is as strong as in the case of the meat of animals in the first stage. But we are not prepared to advocate the use of the flesh of animals markedly reduced in condition.

"It would appear, then, that the opinions of some sanitarians on the subject, and of many medical men who have not had time to specially investigate this important question, are in part founded upon the Livingstone cases and the hypothesis of the Scotch Registrar-General, of both which we have completely disposed ; and in part on inferences hastily drawn from experience of the well-known ill effects which attend the consumption of the meat of animals affected with Anthrax, Milzbrand, etc.—diseases which are essentially different from Pleuro-pneumonia in their nature and effects upon the animal tissues. Notwithstanding the fact that these inferences have no foundation in common experience or scientific investigation, they have been acted upon as if their truth had been established, and have been accepted by the popular mind, doubtless, because they are in accord with the natural feeling of dislike to contact of any kind with diseased animals, and of aversion to the consumption of their flesh.

"NUTRITIVE VALUE AND QUALITY OF THE MEAT OF PLEURO-PNEUMONIC CATTLE.—We have now to consider another branch of our subject : namely, whether or not the meat of animals which have suffered from Pleuro-pneumonia is affected, in point of nutritive value or of quality.

"It is admitted, as we have already pointed out, that the meat, even in a somewhat advanced stage of the lung disease, is indistinguishable from the flesh of healthy animals, and is often of first-rate quality.* But appearance alone is not a safe criterion of nutritive value or quality ; hence appeal must be made to other criteria.†

"In the absence of direct comparative experiments on the lower animals, the important points in determining nutritive value are chemical composition and digestibility. It is admitted that the chemical composition of the flesh in Pleuro-pneumonia has not been found to differ in any material respect from that of a healthy animal,—that is to say, its composition falls within the natural and healthy range of variation established by the following analysis of lean beef on the one hand and fat beef on the other :—

Composition of 100 parts of	Lean Beef.	Fat Beef.
Fat	3·27	30·10
Muscular tissue	20·10	14·52
Mineral compounds	5·25	4·44
Water	71·38	50·94
	100·00	100·00

* See Mr. Fisher's statement, referred to in Dr. Greenhow's Official Report to the Board of Health.

† Dr. Pavy's "Treatise on Food and Dietetics," p. 146.

"Moreover, we are not aware that it has been even suggested that it is less easy of digestion, and we have heen unable to discover any facts which would lead to that conclusion. There is, therefore, no reason to believe that the fresh and unchanged meat of cattle which have suffered from even advanced Pleuro-pneumonia is less nutritive than that of healthy animals.

"As regards quality, however, there is a difference; and the evidence for this is that the meat of animals slaughtered in the *advanced* stage of Pleuro-pneumonia does not keep as well as that of healthy animals. The reason for this obviously is that there is an increase in the proportion of highly carbonized and changeable products in the tissues, consequent on the impaired action of a portion of the eliminating apparatus. But it must be remembered that the products referred to are readily burned into carbonic acid and water, and are present to a greater or lesser extent in the meat of all slaughtered animals. One of the best modes of dealing with a case in which there is reason to expect the proportion to rise and to affect the keeping quality of the meat, as in the case before us, is to exercise greater care than ordinary in bleeding the animal. It is not necessary to adopt this precaution for the protection of the health of the consumer, for, as we have already shown, no injury has resulted from the consumption of the fresh and unchanged meat of animals slaughtered in any stage of Pleuro-pneumonia; but it is desirable for economic reasons, chiefly affecting the vendor, because we cannot too strongly condemn the practice of selling meat in a putrescent condition.

"It is certain, as one of us has stated,* that the use of the seriously tainted or putrescent meat of healthy and diseased animals alike is attended with danger; and there can be little doubt that effects attributed to the virus of one or other of the diseases to which cattle are liable have frequently been due to a state of incipient decomposition of the food consumed. We may also quote, on this point, the weighty words of Mr. Simon, the Medical Officer of the Privy Council, who, in commenting on the subject, says,†—'Sufficient care has not, in my opinion, been taken to separate two important questions—the question of meat being rendered *unwholesome by decomposition*, and the question of meat being rendered *unwholesome by disease*.' This statement, which has reference to the meat of healthy animals, and of those slaughtered while suffering from *any* disease, is not less true in 1877 than at the time it was written.

"It is true that there are some who prefer tainted to fresh and wholesome meat, and who seem to be protected from the consequences of eating it, partly by habit, partly by the culinary art, and in part by a species of dietetic disinfection almost unconsciously practised by persons of epicurean tastes. But, these cases notwithstanding, there is no doubt that the general statement just made is true.

"It follows, then, from the foregoing, that the *fresh* and *unchanged* meat of animals slaughtered during an attack of Pleuro-pneumonia may be safely consumed; and that such meat is not sensibly less in nutritive value than that of other animals unaffected by any disease, but that it is of lower quality, owing to its greater tendency to undergo change,—a tendency, however, which may be diminished considerably by the means we have pointed out.

"In conclusion, we must repeat that we have approached the consideration of this question deeply impressed with its importance. Not only is it a

* See "Manual of Public Health for Ireland," p. 194. See, also, Christison "On Poisons," p. 635; and Taylor's "Medical Jurisprudence" (1865), p. 281.

† Page 31 of "Fifth Report of the Medical Officer of the Privy Council."

matter of serious moment from a hygienic point of view, but grave economic considerations are also involved in its correct solution.

"It surely requires no argument to prove that the unproductive destruction of large quantities of animal food can be attended with but one result—a considerable rise in the price of meat, which must be paid by the consumer whose means enable him to meet the enhanced cost, and a complete deprivation of a very important article of diet on the part of those whose means render them unable to meet this increased expenditure. Nor is this all. Should, unfortunately, the disease become wide-spread, and should the fresh and unchanged flesh of pleuro-pneumonic beasts be condemned as an article of human food, a very considerable rise must take place in our rates. The owners of affected cattle, who have reported them to the authorities by whose orders they have been destroyed, must, to a certain extent, be recompensed for their loss, whilst the public can receive no return by the sale of the carcase, and it must be the tax-payer who will have to bear all this expense. Of course, if the view happened to be correct that such food is unsuited for human consumption, we could only submit; but as it is incorrect, not only incapable of proof, but absolutely contrary to all recorded experience on the subject, a prodigious expenditure of money would be incurred by the destruction of such food, not only without any advantage, but at a positive and most serious disadvantage. Thus it is that both rich and poor are deeply interested in the correct solution of the question submitted by you for our consideration."

OPENING OF THE EDINBURGH VETERINARY COLLEGE.

THE winter session of the Edinburgh Veterinary College was opened in the Council Chambers on Oct. 24th. There was a good attendance of students and others. Bailie Cranston occupied the chair; and amongst others present were—Councillors Macknight, Turnbull, Landale, and Macdougald; Mr. Mylne, Niddry Mains, etc.

The CLERK (Mr. Harris) read letters of apology from Professor Balfour, Miss Dick, Captain Tod of Howden, and Mr. F. N. Menzies.

After a few introductory remarks by the CHAIRMAN,

Dr. AITKEN delivered the opening address. At the outset he paid a tribute of gratitude and respect to the founder of the school. He said there were few names in the annals of veterinary science better known than that of the late Professor Dick. It was now many years since Professor Dick came to Edinburgh and practised in the profession in which he became so celebrated a master. He saw much that was unsatisfactory in the status and character of the veterinary surgeons of his day. He saw a great part of the treatment of the diseases of the lower animals in the hands of men who knew little or nothing of the principles of the art they practised, and who had received no special or methodical training, but depended for their skill upon a certain amount of experience of one kind or another, and often were profoundly ignorant of the anatomical structure and physiological character of the animals they treated. He had received a good education in his profession, and by shrewd observation and unremitting practice had much increased his knowledge, and burned with the desire to spread abroad the truth he had acquired. After much trouble and persevering effort, he succeeded in founding, in the year 1823, the veterinary college which bore his name; and under his able management it soon rose to fame and public importance. For upwards of fifty years he

carried on his course of instruction, adding to the completeness and efficiency of the school as occasion offered, and sending out yearly numbers of trained practitioners to all parts of the world. Many of these had now attained to positions of great eminence, and two of them—Professor Smith of Toronto and Professor M'Eachran of Montreal—were at the head of their profession in their respective countries, and had founded colleges in the land of their adoption which were the best on the American continent. Upwards of 150 graduates had been already sent out from the College of Toronto alone. The late Professor Dick determined that the school which his energy had created and his talents made famous should live after him; and as he had devoted the greater part of his life to it, he also bequeathed to it, at his death in 1866, the greater part of his fortune. Since then the College had seen many changes, and had experienced both the smiles and the frowns of fortune; and not very long ago there was a time when many thought that the glory had departed from it, and that its demise was near. He hoped it was a cause of gratification to those who entertained such gloomy forebodings to know that their fears were groundless, and that the Old Veterinary College was now in a very prosperous condition, and in a higher state of efficiency than it had ever been before. With regard to the New Veterinary College which was opening up in Edinburgh, he said he was sure they could wish it much success, and all the prosperity which it deserved. The successes which had been achieved by the students of their own College had been of late years very great. Not only had they to chronicle cases of altogether exceptional merit in a few, but, what was still more gratifying, a high average standard of excellence among the mass of the students. They had also had their failures. There was one notable cause of these which had recently assumed such proportions as to demand some means of prevention—viz., a not very laudable desire manifested by some students to present themselves for examinations before they were really fit to pass them. They reasoned that, as examinations were to some extent a lottery, there was just a chance that they might have the good luck to be examined on some of the few subjects they knew well, and so manage to scramble through. If they succeeded, they had the discomfort of knowing that they had attained an honour which they had not deserved. If they failed, they not only lost prestige with their fellows, but, what was far worse, they lost it with themselves,—they lost in self-respect, and they lost confidence in their own abilities. This was an evil from which students ought to be preserved, and the cure for it was very simple—viz., to make it obligatory on students not to go up for examination till they had satisfied their teachers that they were likely to succeed. The amount of education required by those who would qualify for the degree of M.R.C.V.S. was very considerable, and in that respect a good change had been effected in recent years. A veterinary surgeon must now be a man of superior education. Not very long ago this was not the case, as the old horse doctor might have united much skill in practice with great ignorance of the theory on which his practice rested. The tendency had lately been to give more than due importance to merely theoretical knowledge; and it was only now that practical education was having that amount of attention paid to it which it deserved. Anatomy, medicine, surgery, pathology, physiology, chemistry, and pharmacy were all now taught practically. The tendency was now towards practical instruction, and it would be some time before the proper balance was struck between theoretical and practical teaching. But there was one thing certain: that as practical instruction increased the whole period of study must be proportionally lengthened. It was only last year that the course of study for the degree of M.R.C.V.S. was increased from two years to three; and he felt sure that ere long another year would have to be added to the course, for not only would the subjects of a veterinary surgeon's education become more

numerous, but a much more intimate and thorough acquaintance with them would be demanded than it was possible to acquire in three years. When they considered that four years were now found barely sufficient to enable a medical student to master the principles of medicine and surgery, and acquire sufficient experience to treat the diseases of the human subject, it seemed somewhat unreasonable that a less period should be considered necessary for the education of those who were to perform a similar office to the lower animals, though the course of study was nearly the same in each. It might be urged that the term of study and the thoroughness of it should be greater in the one case than in the other, in proportion as the life of a man is more precious than that of a horse. But the question before any medical man was not the relative value of the lives of the patients he had to treat; it was how he should best combat with disease. Where cure was practicable, there was no difference in the amount of care and skill required by veterinary and ordinary physicians. When they considered how much there was in common between the diseases of men and the lower animals, it seemed much to be desired that veterinary surgeons should, by their education and training, be on a par with other medical men, and be in a position to co-operate with them in the investigation of many common forms of disease that were very imperfectly understood. How little, for example, did we know as yet regarding the etiology of many infectious diseases! Our cattle were periodically devastated by plagues—Pleuro-pneumonia, Rinderpest, Foot-and-mouth Disease, and the like; and we ourselves were subject to epidemics of Small-pox, Cholera, Typhoid, and zymotic diseases generally. There was here a wide field of research in which well-trained veterinary surgeons might work in harmony with physicians, and, from the greater amount of liberty which they naturally were able to exercise with their patients, might be able to add much to our medical knowledge, and render signal service to the cause of the amelioration of human suffering and the prevention of human disease. Referring to the increased attention now paid by the medical profession to the subject of hygiene and sanitation, the lecturer remarked that what was now most wanted was that the masses should be taught the elementary laws of health. Pointing out the deplorable ignorance which prevails as to the ventilation of human dwellings, he said that the same thing was apparent in the keeping of the lower animals. Which of them, he asked, had ever seen a stable or a byre that was properly heated and ventilated? We spoke of the smell of a stable and the smell of a byre as if it were a necessary part of them, and were not due entirely to a want of cleanliness. The prevention of disease was a far more important branch of a physician's duty than the cure of it. That prevention was better than cure had passed into a proverb; unfortunately it was often apt to be remembered when it was too late. It might be said that, while it was a physician's interest to cure disease, it was not his interest to prevent it, and this might account to some extent for the greater attention that had hitherto been given to the cure rather than the prevention of disease. If that were so, it might then be well worth our while to consider whether we should not take a leaf out of the book of that wonderful people the Chinese, who paid their physicians as long as they were well, but stopped payment as soon as they became ill and needed curative interference of the physician. In conclusion, the lecturer offered some practical advice to the assembled students.

Mr. MYLNE, Niddry Mains, said he had listened with much pleasure to Dr. Aitken's address. He had always taken a great interest in the College, and he wished every success to it.

Councillor MACKNIGHT also expressed the satisfaction with which he had listened to the address, and dwelt on the importance of a general scientific education being brought to bear on the subject of the physiology of the horse

He had been long acquainted with the late Professor Dick, and had always taken the deepest interest in the welfare of the College.

Principal WALLEY, in adverting to some of the points alluded to by Dr. Aitken, mentioned that great improvements had taken place in the system of education, which he had no doubt would prove beneficial. To show the interest that was being taken in the College by persons out of doors, he might mention that Councillor Waldie, Leith, had intimated his intention to award a prize for a paper on the horse, and another gentleman had offered a prize for the best paper on "Parasites on Domestic Animals."

The CHAIRMAN congratulated the Principal, professors, and students on the excellent prospects for the coming session, which he had no doubt would be a most successful one. The numbers were larger than previously, and their professors, in regard to ability, were not behind those of any other college in this country.

On the motion of Councillor LANDALE, a vote of thanks was given to the chairman, and the proceedings terminated.

OPENING OF THE NEW VETERINARY COLLEGE, EDINBURGH.

THE opening address of the session of the New Veterinary College, Gayfield Square, was given in the College on Oct. 24th, by Principal Williams. The chair was occupied by Mr. Greaves, Manchester; and on the platform were Colonel Gillon, of Wallhouse, Dr. Stevenson Macadam, Dr. Young, Mr. Johnston, Dr. Dycer, Mr. Macgregor, S.S.C.; Dr. Roberts, Captain Wilson, 90th Regiment; Mr. Richardson, Mr. Grainger, Army Veterinary Department; Mr. Finlay, Inniskilling Dragoons, etc. Letters of apology were read from the following gentlemen among others: Sir James Gardiner Baird, Sir John Don Wauchope, Sir Frederick Fitzwygram, Captain Tod, of Howden, Mr. F. N. Menzies, Secretary of the Highland and Agricultural Society; Dr. Zieglier, and Dr. Smith, Great King Street. A communication was read from old pupils, enclosing a sum of money to Principal Williams, with which to purchase a medal for the College, or to be given in money prizes.

Principal WILLIAMS then gave the introductory address. He was happy to welcome back those who were in the habit of attending at the College from year to year—old familiar faces who had taken an interest in the welfare of the College ever since its foundation. He was sure that it would be gratifying to know that their College was gaining and prospering ever since its commencement. The number of students had increased, and last year they had no less than seventy-three attending the classes. It would also be gratifying to know that those students who presented themselves for examination were successful in obtaining their degrees in the preliminary stages, and they had every reason to be satisfied with their prosperity. He proposed in his address to answer two questions, which had been asked during the past year. First—Has our profession made any progress during the last thirty years? and second—Is the practical education of our students not neglected for the sake of superfluous scientific attainments? In answering the first of these questions Principal Williams gave a history of the science down to the present time, adverting to the differences between the treatment of veterinary colleges by the Government of this country and those of the Continent,—the latter Governments countenancing and supporting veterinary colleges, the professors being maintained by the State, and therefore above the necessity of doing work beyond that necessarily connected with their respective chairs. He then treated of the advance of the science with regard to

proficiency. Now-a-days they considered that the profession should possess some amount of education before entering their colleges; but in old days it was maintained, both in London and Edinburgh, that education was rather a drawback than an advantage; that the diseases of the lower animals were few, the remedies few; and that these few diseases and remedies had in themselves something disagreeable to those sufficiently educated to become students of the sister profession; and it was laid down, as an axiom to be handed from father to son, that an ounce of practice was worth a ton of theory,—that the man who could shoe, groom, and ride a horse, was the *beau-ideal* of a veterinary surgeon. They now looked with pleasure on a student who had a good knowledge of the management and manipulation of animals—indeed, they took care to train them in this department; but they considered mere manual labour of secondary importance to scientific attainments. From the ounce of practice just referred to, did this place the newly-fledged veterinary surgeon in a position greatly superior to that of the cow-doctor and farrier? An impartial study of the history of the profession compelled him to conclude that the ounce was simply laid down as a law, not demonstrated. The student was told he was to do so-and-so in such-and-such a disease, but he was not shown how to do it, nor why it ought to be done; consequently young men had to fill a field with dead horses before they knew much of their profession; and secondly, this ounce of practice was founded on wrong principles—the men who promulgated it very often knowing but little of the nature of the disease, holding a knowledge of its causes in the greatest contempt, and endeavouring to expel it by main force from the animal body, looking upon it as some demon that was to be expunged by the heroic methods contained in this ounce of practice. If they compared the history of any epizoötic outbreak of a severe type in bygone days with those which occurred in this neighbourhood last winter, and the marked success which attended its treatment, he thought they could safely affirm that, as their scientific knowledge had advanced, their success in practice had been more complete. In answer to the second question, he would say that, so far from interfering with practical education, the present system gave the student opportunities for attending to that particular branch of his studies not possessed by those who studied under the old rules; as, in the present days, previous examination gave the student eight clear months of his college life to devote himself entirely to the more practical part of his education. In consequence of the teaching that previously obtained, young men left the college with their heads filled with ideas of the transcendental power of some remedies in the cure of disease, yet having but little knowledge of that disease itself, its causes or physiological terminations. The theory they now endeavoured to instil into their students, be it condemned or not, was that which led to the tracing back of the disease to its source, the discovery of its cause, a thorough appreciation of the physiological changes which occur in the animal body whilst under the influence of causes leading to morbid effects, and how the modification of such, after their causes had been removed, might be effected with or without the aid of medicine. In fact, their endeavour was to extend the first attempts made by the late Professor Barlow to break through the trammels of the past, feeling very strongly convinced that the more effectually they did this the more successful would be their practice, and the more valuable their services.

On the motion of the CHAIRMAN, a vote of thanks was given to the lecturer; and a similar compliment having been paid to the Chairman on the motion of Dr. STEVENSON MACADAM, the proceedings terminated.

OPENING OF THE GLASGOW VETERINARY COLLEGE.

THE winter session of the Glasgow Veterinary College commenced on October 24th. In the afternoon Professor COOKE addressed a meeting of students in the hall of the College, Buccleuch Street. There was a good attendance, and Professor Cooke was accompanied to the platform by Professors M'Call, Cleland, M.D., M'Kendrick, M.D., Knox, M'Gill, and M'Queen; Messrs. R. Walker, Lethamhill; Murray, V.S., Girvan; and Pottie, V.S., Paisley. The chair was occupied by Dr. Cleland.

Professor COOKE, in the course of his opening address, said that a few years ago there was an admirable scheme drawn up for the students, but very little time was given for their studies. In about fifty weeks they were supposed to get a good knowledge of anatomy, chemistry, toxicology, materia medica, pharmacy, botany, physiology, histology, morbid anatomy and pathology, diseases of the horse and other domestic animals, medicine, and therapeutics. Now, however, this had been altered, and their time was so extended that they need not be in such a hurry, but were able to ponder and digest, as well as read. They could not say from actual experience what the effect of the new rules would be: the time they had been in operation was far too short for that; but they expected that they would be enabled to turn out men better grounded in the collateral sciences, as well as more experienced in the treatment of disease. The authorities controlling the education of the veterinary surgeon had from time to time altered the course of study—sometimes giving more prominence to theory and book-learning, and at others to practical knowledge; but now they had a happy mixture of both. The old system had produced such excellent men that, although every one seemed to think the change by the extension of time at college a necessary and wise one, the students would need all their energy and ability to surpass them. In that College they had been very successful under the old system, and he trusted they would continue to flourish equally well under the new. The past year had been a very satisfactory one, the number of students being slightly in excess of former years; and, what was of more importance, they had rarely been surpassed in that or any other college. In the final examination last April there was only one rejected student among the number sent up—about a score. He hardly thought veterinary science had received the amount of stimulus in the path of research, in the way of bursaries and endowments, it deserved in the past; but it was with great pleasure he had to announce that a beginning had been made in the West in this direction. The gentleman who was till lately the Chairman of the Board of Examiners —Dr. Allen Thomson—had left with the Principal the sum of £25, to be expended in any way which he might deem fit. He trusted this would only be a nest egg, and that very soon they would be able to announce a larger sum, so as to establish a bursary of the annual value of this gift.. Professor Cooke also stated that Mr. M'Gill had been appointed Professor of Anatomy in room of the late Professor Fordie; and that Mr. M'Queen, who obtained a diploma in April last, had been appointed to the Chair of Materia Medica.

Professor CLELAND, in proposing a vote of thanks to Professor Cooke for his able address, in a few choice sentences referred to the connection which many years ago existed betwixt himself and the College—he having been the first lecturer selected to fill the Chair of Anatomy in the Institution. The progress the College had made since the time he referred to was not only gratifying, but amazing, and no doubt largely attributable to the energy and untiring care bestowed on it by Principal M'Call and his colleagues. Professor Cleland, in complimentary terms, referred to the handsome donation given to the College by his predecessor in office, Dr. Allen Thomson, prior to leaving the city.

RABIES AND HYDROPHOBIA IN DEVONSHIRE.

FROM a very interesting paper in the *Sanitary Record* for November 2nd, on the necessity for further legislation for preventing the extension of Rabies, and written by Dr. A. Wynter Blyth, Medical Officer of Health for the County of Devon, we glean some information as to the appearance and extension of this malady in that county. Dr. Blyth writes :—

"With the most persistent watching and inquiry, and with the accident of an official position giving me constant communication over a large portion of the county, I can only find here and there links of a chain, the rest of which must be pieced on supposition or probability. It came from the north-east : the first definite evidence of its existence I have is that some time in the month of January a rabid dog, wandering in a thicket in the neighbourhood of North Molton, a parish bordering on Exmoor, bit a game-keeper, who, in the early part of May, died from Hydrophobia. In the month of March a strange dog entered by night the yard of a farmer in the same parish, tearing his way through considerable obstacles, and bit his sheep-dog. The sheep-dog went mad a month after the occurrence. These cases, being all in the same neighbourhood, may be, with the greatest probability, viewed as those of direct lineal succession. We may suppose that the solitary rabid dog imported it, and bit others in January ; that the second series developed in March, one of them biting the farmer's dog ; and that the farmer's dog, with others, formed a third series, one of which at all events fructified in April, and was in a condition to inoculate a fourth series. (The terrible harvest of Hydrophobia is reaped in successive crops. In this county there appear to have been intervals in which no rabid animals were known to exist—viz., from January to the latter end of April, from about May 23rd to middle of June, most of the early part of July, ten days in the early part of September, and twenty days in October. At the present date, October 25th, there is an exacerbation, madness being reported in different parts of the county.) Directly we arrive at the fourth term in the progression, it is useless to attempt to trace the individual agents, and general statements must take the place of details. Without a doubt the third series, of only one of the members of which I have any record, was sufficiently numerous to infect a considerable extent of territory ; for in April I traced it into the town of South Molton, and for a radius of four or five miles round that town ; these probably belonged to a fourth or fifth series, and from them sprang a considerable number of rabid dogs, wandering about the county in every direction. In May it had appeared in Roborough, Honiton, Little Torrington, and North Lew ; Exeter was early infected, and in its turn infected the surrounding country. In July a boy at Ashburton, a girl near Ottery St. Mary, and in August a child at Barnstaple, were all severally bitten by rabid dogs, and have died since at different dates from Hydrophobia. The epidemic (epizoötic?) has not been confined to dogs and men ; it has been fatal, directly and indirectly, to a very large number of cattle, sheep, dogs, and pigs.

"During the whole of this time, some authorities have used the powers they possessed of restricting the movements of dogs ; others either refused to believe in the existence of Hydrophobia, or declined to take any action. The few boroughs and divisions which used their powers did so according to their individual wisdom,—the result being a number of regulations in different areas of very varying value ; and since in other areas there were no restrictions at all, the result has been that very little control, if any, has been exercised on the propagation of the malady. At the present time the infection has reached its height. I have notes of the existence of rabid dogs in every single division in Devonshire ; it has gone from north to south, from east to

west, and is at the present time not passing over, but extending to Cornwall."

Dr. Blyth is of opinion that the virus in this outbreak is much more potent than usual.

ANTHRAX IN THE BAVARIAN ALPS.

BOLLINGER (*Deutsches Archiv für Klinische Medicin*, Band xiv.), Professor at the Munich Veterinary School, has recently had occasion to study on the spot the anthracoid affections which, for a number of years, have prevailed in the pastures on the mountains of Upper Bavaria, towards the Tyrol; and where, in 1874, it had assumed large dimensions, coincidently with an extraordinary and inexplicable development of the disease in other parts of Germany. As a proof of this, it may be mentioned that on the Heimgarten, an Alpine pasture on which few above five hundred head of cattle graze, the disease broke out on July 10th, 1874, and on the 26th of the same month, ninety had already perished and more than thirty were ill; in the district of Tœlz alone, up to August 9th, 539 cases of Anthrax had occurred, or 10 per cent. of the bovine population: 236 of these were dead, 243 recovered, and 60 were under treatment.

The disease presented itself in its varied forms—Anthrax Fever, Apoplectiform Anthrax, and Symptomatic Anthrax. It was communicated to the deer in the forests, six of these creatures having been found dead. It was also transmitted to seven people, one of whom succumbed.

Among the numerous carcases of cattle he examined on the pastures, Bollinger constantly noted the absence of hæmorrhagic Enteritis, as well as the frequent absence of hæmorrhagic infarctus in the spleen. As he has always—observed the same negative signs in the animals he experimentally inoculated at the Veterinary School, he asks if this is not the consequence of a certain degree of Anæmia from which the cattle of the Alpine pastures suffer, as did the majority of the creatures he experimented upon.

In the way of medical treatment, recourse was more particularly had to general internal medication. Carbolic acid yielded good results, though not always—especially if the animals had been bled by some empiric. Several trials were made of chloral, but not sufficient to arrive at any trustworthy conclusion. It was the same with salicylic acid, which, according to Kolbe, is tranformed in the blood into carbolic acid, and should therefore be a more efficacious anti-virulent remedy than the carbolic acid itself.

The interment of the carcases not being possible, in consequence of the rocky nature of the ground, they had to burn them; with wood and bushes a pile was made, on which the bodies, previously cut into quarters, were laid. This operation was much less fatiguing than burying, and the carbonisation of the carcases was completed in about twelve hours for the largest of the animals.

In every instance, Bollinger found in the blood of the diseased the characteristic and specific bacteria of Anthrax. In the pulp of an animal whose carcase was examined immediately after death, these organisms were found in such immense multitudes that they formed a veritable lawn of cryptogams, and it might have been said that all the organs were entirely composed of bacteria. With regard to shape and dimensions, these bacteria, which were sometimes obtained from carcases at an altitude of nearly five thousand feet above the level of the sea, did not differ from those that Bollinger had examined at Vienna, Munich, in Switzerland, and elsewhere; and they were identical in every respect with those produced by inoculation in goats, rabbits, and cats. Speaking on this matter, Bollinger insists on

the specificity, even in a morphological point of view, of the Anthrax bacteria, which an able observer like himself, accustomed to these kinds of researches, could not confound with the bacteria of Septicohæmia, those of putrefying animal matters, or those of sour milk, etc. He adds that the bacteria of the latter class may be produced in badly preserved Anthrax blood, even in a few hours; but then it is observed that the bacteria of putridity move about in the most lively manner, while those of Anthrax are immovable.

In his inoculation experiments, Bollinger did not always succeed in producing an Anthrax tumour or malignant pustule; frequently he has witnessed a general infection, an apoplectic Anthrax, supervene,—and this sometimes towards the third day. With regard to this subject, he calls to mind that, recently, Gerlach, after inoculating a horse with Anthrax, saw the fever developed in about two hours, and the animal succumb in a little more than six hours. The duration of the latent or incubatory period, during which the animal may appear in good health, may therefore vary between two hours and seventy-two hours.

In speaking of the causes of Anthrax, Bollinger is inclined to attribute the chief etiological *rôle* to the influence of the soil, which is in its nature marshy. Nevertheless, he does not so much blame the miasmata as a certain specific infection in the soil—an impregnation of the pastures by matters bearing bacteria. Ground soiled by the blood or excrement of animals affected with Anthrax may remain for a long time virulent, as numerous facts prove: the carcase of an animal which has been diseased, when not interred sufficiently deep, is more dangerous than marsh malaria. Ground so impregnated remains a permanent danger, a kind of predisposing influence, which becomes an active agent in producing the disease when occasional causes arise. The principal of these occasional causes, Bollinger considers, is the high temperature of certain summers, and the extraordinary abundance of flies in certain years.

With regard to the influence of warm weather, Bollinger cites the observations of Heusinger, where he says that all the extraordinarily hot summers of this century (1803, 1807, 1811, 1822, 1826, 1834), have been Anthrax years. He adds, that after last August the weather became colder, and the disease consequently more rare in the Alpine pastures of Bavaria.

Bollinger is strongly disposed to attribute a great etiological share in the production of the malady to flies, which popular opinion had already, and for centuries, credited with this power. If there are certain kinds of flies which themselves perish from Anthrax infection when they have fed on animals that have died of the malady, there are many, on the contrary, which enjoy a certain immunity, and may readily disseminate the virus. Bollinger has left flies and asticots in contact with Anthrax blood, and has seen the former at the end of two days, the latter after fifteen days, still quite healthy. Experiments of the same kind, and having the same result, have been also made by Zeilinger, a veterinary surgeon at Munich. Even previous to this time, however, Bollinger has made inoculations on rabbits with flies captured on the carcases of animals dead of Anthrax, and has succeeded in inducing the disease in them. Davaine has likewise succeeded in these experiments. Bollinger is also willing enough to admit the influence of other living media—as wild creatures, deer, etc.—which may readily infect pastures separated from those which are contaminated by forests. Finally, the skins and flesh derived from diseased animals, and which are often disposed of clandestinely, are also a frequent source of infection.

Starting with this special notion as to the causes of Anthrax, Bollinger insists on the complete abandonment for some years of every suspected pasture, as an essential prophylactic measure. He justly considers that it is better to sacrifice, for one or more years, the grazing of these pastures, than

to incur the risk of losing one-fourth or one-third of the herds; in the meantime, advantage may be taken of the interval to drain and otherwise improve the land. In every case it is prudent, and a wise sanitary policy, to leave at once a grazing ground where the disease begins to show itself. And, lastly, Bollinger thinks that in general it is better to burn the carcases of Anthrax-stricken animals than to bury them; and he particularly recommends the careful disinfection, if possible, of the ground which has been soiled by the blood or excreta of diseased beasts. He admits that the measures he recommends are not of easy application, especially in pastures difficult of supervision; but he believes them to be the only rational measures that can be adopted, and that they are in harmony with our present knowledge of the malady.

GLANDERS AMONG THE COAL-PIT HORSES OF SAARBRUCK, LOWER RHINE.

In the *Archiv für Wissenschaftliche und Practische Thierheilkunde* (vol. ii. part 1), the late Professor Gerlach, Director of the Royal Veterinary School of Berlin, furnishes us with a most instructive and interesting article on the prevalence of Glanders among the horses employed in the extensive coal-pits of Saarbruck, Rhenish Prussia (*Die Rotzkrankheit unter den Grubenpferden des Kohlen-Reviers Saarbrücken, und die sanitären Verhältnisse der Pferde in den Steinkohlengruben überhaupt*).

In the coal-mines of Saarbruck, more than six hundred horses are employed, and it is the general belief that those animals which are compelled to live continually in them, or are only allowed to come to the surface for a short time, must sooner or later perish from the effects of the pernicious conditions to which they are doomed to submit underground. It would appear that the mortality among them from what has been called the Pit-disease (*Grubenkrankheiten*) or Pit-Catarrh (*Grubendruse*), has for years been very great, though it has been limited to certain pits. The loss during the last thirty years cannot be correctly estimated.

It was reported in 1864, that in one pit alone—that of Dudweiler—seventy-six horses had been lost in three years; and Veterinary Surgeons Kautz and Willach stated that, from 1874 to 1875, in three pits there were twenty-eight deaths, and in another—that of Friedrichsthal—forty-seven. Only from 1852 have statistics of the losses been attempted; and from these it appears, in twenty years (up to 1872), there were more than 434 glandered, and more than 253 suspected horses.

The general belief at Saarbruck, even among the veterinary surgeons, was that Glanders arises spontaneously in the pit horses, in consequence of their continual and excessive fatigue in a vitiated atmosphere, and chiefly through improper or inadequate feeding. The leaseholders looked upon the misfortune as a matter of course, and as a kind of annual tax they had to pay for working the mines with horses—while the veterinary surgeons thought the disease was a special kind of Catarrh which predisposed the animals to Glanders, and that this specific malady would certainly ensue if they continued to be exposed to the same mal-hygienic influences. As has been said, they believed it to be a particular kind of Catarrh or "Strangles," which could generally be cured by careful treatment, especially by removing the diseased from the pit and working them in the open air. They took the disease, it was asserted, because they respired a vitiated atmosphere, inhaled the coal-dust, often drank stagnant water, were exposed to frequent changes of temperature, and sometimes to draughts when they were very hot. It was the opinion of Veterinary Surgeon Kautz, who had made a special study of the

coal-pit malady, that it was curable if taken in time and properly treated; but otherwise that it ran into Glanders, just as that disease often succeeds "Strangles," or Pyæmia becomes Glanders. Horses suffering from the Catarrh were often sold to boatmen and coal-carters, from an idea that it disappeared when the animals worked in the open air above ground, but would soon return if they were worked again in the pits. In this way, in 1874, from one pit, fifty to sixty horses were openly sold; and as the malady was only Glanders in one of its less distinct forms, it can readily be understood that the disease was not only maintained in the pits, but that it was carried about the neighbourhood and widely disseminated by means of these discharged horses.*

So long as the spontaneous development of the malady in the pits was believed in, and the above-mentioned causes were supposed to be at work in its production, the necessary sanitary measures for the extinction of Glanders were more or less neglected. Those animals which were manifestly affected with Glanders were certainly destroyed, and a more or less superficial disinfection was carried out; but nothing more was done in this direction, as the managers of the pits thought they were in the presence of an inevitable loss, as a natural consequence of the work in the mines. It should be noted, however, that with regard to hygienic measures much was attempted: the underground stables were made as comfortable as possible, the ventilation was improved, better water was procured, and everything that could be suggested in this direction was accomplished; but without avail. Special veterinary surgeons were employed to make periodical inspections; these inspections took place at first every two months, but latterly they were made more frequently. These inspections proved of no value, as those interested in concealing the existence of disease found ready means of keeping the most suspicious animals out of the way; while the inspectors did not regard as glandered, horses affected with this so-called "Grubendruse," they being apparently possessed of the idea that the three pathognomonic symptoms of Glanders should be present—or at least the ulceration. So that they allowed suspected or really glandered horses to be sold and carried away into different localities; and the result is given by Gerlach in an enumeration of the districts in and around regions where Glanders had committed the greatest ravages for many years.

Matters at last attracted so much attention, that the enlightened Prussian Minister of Agriculture, Friedenthal, deputed Professor Gerlach, in May, 1875, to visit and report upon the state of the horses in the Saarbruck pits.

The duty was not a pleasant one, as for a number of days he was engaged at great depths—three hundred to a thousand feet below the surface of the ground—clad in a miner's dress, and with a Davy-lamp in hand.

An interesting fact noted in this inspection, was the discovery of a certain number of pits, the horses in which were perfectly free from Glanders and the so-called "Pit-strangles"; though with regard to work and sanitary management they were in nowise different from the horses in infected pits. In four pits, containing 297 horses, there was not the least trace of Glanders or Farcy; while in nine other pits, in which were 595 horses, he found twenty-eight undoubtedly glandered, only twelve of which had been isolated, and

* Zundel, in remarking on this occurrence in the *Recueil* for February, 1876, states that the government of Trèves is one of those in which Glanders always most extensively prevails, and particularly in the circles of Saarbruck and Sarrelouis; the horses employed in drawing the boats on the canal of the Saar have often carried the disease into Lorraine and Alsace, and to such an extent that in the latter the authorities have been compelled to resort to special sanitary police measures.

forty-two more or less suspected. These and the sixteen glandered horses were mixed up and working with those apparently healthy.

Many of the horses which Gerlach pronounced to be affected with Glanders, the owners declared were only suffering from the "Pit-catarrh," and he appears to have met with strong opposition from these people. Some of the horses were asserted to be recovering, the swollen glands were diminishing, and they would do good service for years to come. It was only when the nasal discharge became very profuse that isolation was had recourse to ; and not until ulceration of the Schneiderian membrane was advanced was a horse destroyed.

Nearly all the cases of Glanders found in the pits were of the chronic type, the submaxillary lymphatic glands being slightly enlarged, very hard, and adherent to the surrounding textures ; some had trifling nasal discharge, and others had the breathing affected, as if "broken-winded" ; these were in good condition, with smooth glossy coat. Glander ulcers were only discovered in a few horses, and Farcy in three.

At the recommendation of Gerlach, the horses suffering from confirmed Glanders were destroyed by order of the *Landräthen ;* and as the Professor could not conveniently make an examination of the carcases, this was undertaken by Superior Veterinary Surgeon Schaetzer. The bodies of twenty-four horses were dissected, and in all were discovered evidence of the presence of Glanders ; in the majority the disease had been of long standing, and of an unusual chronic form. The more important facts of the necropsies are as follows :—

1. Glander ulcers in the upper part of the nostrils in eighteen horses.

2. Stellate cicatrices, near to or without the Glander ulcers, in twelve horses,—in six cases they were very much diffused on the nasal septum and turbinated bones.

3. Submaxillary glandular alteration ; in eleven cases the glands were unusually large and hard, in twenty-three cases they were studded with miliary tubercles, and in three cases they were calcified.

4. Large glander nodules in the lungs in fourteen cases ; in five they were as large as a goose's egg ; in three cases, in the centre of the glander tumours was a cavity containing purulent and caseous matter.

5. Miliary tubercles were found in the lungs in twenty-one instances, and in seventeen horses they were in a calcareous condition.

6. Glander nodules were found in the spleen in four cases.

As we have said, Gerlach's opinion met with strong opposition from the horse-contractors, and even from the local veterinary surgeons, who would not admit the existence of Glanders in horses which externally gave every evidence of being in good health, and did their work well. Nevertheless, the Professor, strong in his scientific knowledge and extensive experience, insisted upon the correctness of his diagnosis, and ordered forty-two of the suspected animals to be isolated. The judiciousness of this measure is demonstrated by the fact, that in less than four months thirty-six of them were disposed of, thirty of which were affected with confirmed Glanders. Of the other six horses (four of which were drowned in the Saar, and two died of Colic), four were found to be infected with Glanders. Thus, of the forty-two horses sequestrated, and placed under observation as "suspected," thirty-four were glandered.

In his inquiries into the sanitary condition of the pit horses, Gerlach makes us acquainted with some very interesting facts as to equine subterranean existence. The horses employed are strong, active animals, like those bred in the Ardennes. Their condition was excellent, and coat fine and shining, as if in the best of health. With the exception of those glandered and suspected, none of the other 525 offered indications of

any internal or external chronic or acute disease. In a few there was a slight tendency to affections of the lymphatic glands in the submaxillary space or elsewhere; as well as to Catarrh, Rheumatism, or Inflammations. Taking all things into consideration, the health of the horses was wonderfully good; and as a rule they were in better condition than horses working above ground. Even those which were glandered appeared to be less affected constitutionally, and their health less undermined by the disease, than is usually observed. Horses which had evidently been affected with Glanders for a long time, got through their work fairly well, were fat, and had the coat shining; while externally the nasal discharge was scanty, often absent, and the only symptom was the large, hard, submaxillary, lymphatic gland. Farcy, as has been already noticed, was extremely rare, but the pulmonary nodules of Glanders were never absent.

Of the injuries and diseases incidental to their occupation, wounds of the head, and lenticular Cataract must be placed in the foreground.

Gerlach enters at length into the feeding, working, and general care taken of the pit-horses, which he considers fairly good. The water and ventilation, as well as the temperature, he alludes to, but does not find much fault with. In inspecting the underground stables, he could not perceive those ammoniacal emanations which are so marked in stables above ground; and in those places where the strongest currents of air were noted, there was no sensible difference in the temperature, which all the year round was about that of summer: milder and far more equable than outside the pit. Indeed, Gerlach was so impressed with the predominance of those conditions which are favourable to health, that he is disposed to admit a lesser degree of virulence or contagiousness in pit Glanders than in that occurring in the open air.

Gerlach concludes his valuable contribution to the literature of this most serious equine malady by the following *résumé*:—

"1. Among the coalpit horses of Saarbruck, injuries to the head and blindness from Cataract are, of all other ailments which have their origin in the particular conditions of pit life, the most common. In all other respects, everything relating to health is very favourable.

"2. With the exception of the existence of Glanders, the whole of the horses in the nine coalpits were in the best of health. This disease is due to a specific cause,—it is an infectious disease, and is no more the ordinary 'cold' of every day occurrence than it is a simple Catarrh. Nowhere in the month of May could such a number of horses be found in such thorough good health. Among pit horses Chronic Catarrh, and glandular affections in the submaxillary space, are therefore always to be looked upon with more suspicion than any other disorders.

"3. 'Chronic Strangles' ('Pit Strangles') is not due to some pernicious influence peculiar to coal-mines. It is not a pit disease; it is the so-called 'suspicious Strangles' (*verdächtige Druse*),—that is, Glanders in its developing stage.

"4. Genuine development of Glanders occurs among the coal-mine as among other horses. Only when such development occurs among horses above ground there may be doubts or uncertainty as to its origin; but in the coal-mine there should be no uncertainty, owing to the excellent sanitary arrangements maintained therein; and, secondly, owing to the fact that Glanders was only discovered in five pits, that a similar number of horses in four pits were wholly free from it, and that in three pits it had not been seen for many years, though the management and general conditions were the same in the free and infected pits. District Veterinary Surgeon Werner, who had attended to the horses in the Itzenplitz pit for twenty years, states that he had never found a case of Glanders there; while in the Dudweiler

pit, in which are the best stables, and where the management is without fault, Glanders has continually prevailed for as long as the present managers can remember.

"5. Glanders is domiciled in all the infected pits, and the belief in its spontaneous development has caused the neglect of sanitary police measures. The disease is therefore stationary in these mines, which have for years been a source of the disease for the neighbourhood.

"6. Glanders runs its course among the pit horses slowly, and at first with very few apparent symptoms, under ordinary circumstances. The chronic character of the disease in them is very well marked throughout, Glander-Catarrh being little noticed, and the nasal discharge in the majority of the diseased horses being almost, if not quite, imperceptible. Farcy was only found in three cases. From the character of the submaxillary lymphatic glands, as well as the result of the necropsies, the duration of the disease in the majority of cases could not be calculated; it could only be surmised that with more than one-half of the horses it must have been in existence for more than a year.

"7. The very chronic course it runs corresponds apparently to its contagiousness, which is feeble among the pit horses.

"8. Glanders can be extinguished among the pit horses. The difficulty in accomplishing this, however, must be greater than above ground, though the less virulency of the disease and other favourable circumstances make its extinction possible without evacuating the infected pits and without destroying all the horses. The sanitary police measures must be as follows: the strictest veterinary control; weekly inspections of all the pit horses; prompt destruction of those exhibiting symptoms of Glanders, as well as of those presenting suspicious symptoms; isolation and surveillance of those offering the most trifling suspicious indications; the necessary disinfection of the hospital stables without the pit, and the stables within it, as well as every place where the animals may have been fed. The surface of the coal should be disinfected by a concentrated solution of chloride of lime.

"The most important point is the immediate isolation of any horse presenting the slightest suspicious symptom; and as the general health of pit horses is much better than that of horses working above ground, Catarrh and glandular affections seldom prevail. Therefore, in all the infected pits all horses which exhibit symptoms of Catarrh or slight Strangles should be looked upon as suspicious, and isolated."

Gerlach's paper appeared in last January's number of the *Archiv*, and we learn that in April energetic measures were adopted for the extinction of Glanders in the contaminated pits. In the Kronprinz mine 45 horses were destroyed, at the Dudweiler mine 116, at the Albert mine 20, and at the Ziehwald mine 2; and other horses were not to be introduced into these pits until disinfection had been thoroughly carried out. The owners of the slaughtered horses—the contractors for horse power—were to receive from Government full compensation for those horses which were found entirely free from the disease before they were killed; and the provincial funds were to furnish half the value of those which were diseased.

PATHOLOGICAL ANATOMY OF CHOREA IN THE DOG.

A PAPER was recently read at the meeting of the Royal Medical and Chirurgical Society of London, on "The Pathological Anatomy of Canine Chorea," by Dr. W. R. GOWERS and Mr. H. R. O. SANKEY. The paper contains an account of the changes found in the nerve-centres in two cases of the canine disease which has been termed Chorea, although it bears but little resem-

blance to the Chorea of man. It consists of quick muscular contractions, separated by one interval, and without incoördination or fidgety movement. In the two cases the movements were similar. In one they were confined to one fore-leg, and the changes found in the nerve-centres were slight—the medulla oblongata presenting nothing abnormal. In the spinal cord the large nerve-cells of the cervical region were very granular, and appeared swollen, the body of the cell being in some instances apparently distended with granules, so that it had an almost globular form. This change was more marked on the right side than on the left. In the upper part of the cervical region there was a slight increase in the minute nuclei of the anterior column on the right side. In the upper lumbar region the nerve-cells of the right posterior vesicular column were much more granular than those of the left. In the other case—a young retriever—the twitchings were general, and had commenced (in one fore-leg) after Distemper, two months before death. They were more marked when the animal was at rest, and were accompanied with considerable weakness in the limbs, especially the hind-limbs; sensation was considerably diminished, the posterior half of the trunk and hind-limb being quite insensitive. The muscles of the neck and those of the larynx, tongue, and jaw, were involved in the twitching. After death, the heart, the muscles, and the cerebral hemispheres, with the central ganglia, were healthy. Microscopic examination showed extensive disease in the spinal cord, medulla oblongata, and cerebellum. The most conspicuous change was an infiltration of small round lymphoid cells, precisely resembling white blood corpuscles. Areas so infiltrated were found abundantly in both white and grey substance in all parts of the cord, the distribution varying much: in some parts in the lateral, in others in the anterior, in others in the posterior columns. In some places the anterior, in others the posterior grey cornua, were infiltrated. In some places the nerve-tissue appeared disintegrated and destroyed, but there the infiltration was slighter—it was in the form of ramifying tracts, always corresponding to the course of vessels. From this the authors are inclined to regard it as a leucocytal infiltration. The nerve-cells in many parts appeared healthy, but in others were very granular, and in some parts were surrounded by the lymphoid cells. Some nerve-cells had a granular centre and an ill-defined boundary. The protoplasm of many was encroached on by vacuoles, partly outside the cells. These had in places almost destroyed the cells. They appeared formed during the process of hardening; but the authors suggest that they are of pathological significance, since they were absent in another cord similarly prepared. In the medulla oblongata the changes were similar but slighter, and confined to scattered areas of cellular infiltration. A similar infiltration existed extensively in the medulla of the cerebellum, and was in some places very dense. The cortex of the cerebellum, however, was healthy. In each dog the effect of section of the cord was observed. In the slighter case Dr. Hughlings Jackson had noted that the movements continued for a few moments after pithing. In the other, in which the changes in the cord were extensive, artificial respiration was kept up after division of the cord, and no movements occurred in the parts below the section, although they continued in the muscles of the head and jaw. In other recorded cases, however, similar movements have been observed to persist after the section of the cord. It is remarkable, therefore, that in this case, in which the cord was so diseased, the movements should have been arrested. It is possible that in some cases the movements may be encephalic (perhaps cerebellar), in others of spinal origin; but another explanation of the cessation of the movements may be that the section of the cord temporarily inhibited by shock the action of the weakened nerve-cells of the cord. The cellular infiltration appears from its course to have been the result of vascular disturbance, but whether

primary or the result of functional over-action of the nerve-elements, it is difficult to say. Its random position indicates an independent progress, and accounts for the motor and sensory paralysis; but its limitation to the cord, medulla, and cerebellum suggests a primary dependence on functional disturbance of the nerve-elements. The only morbid appearance common to the two cases was a change in the nerve-cells of the cord; and this may be regarded as the primary morbid change, the indication of their over-action to which the vascular change and cellular infiltration are secondary in origin. To decide these and other points, however, further observations are necessary.

The PRESIDENT, in according to the authors a vote of thanks, said that good honest work like this was never lost, serving as materials from which hereafter some real and important conclusions might be deduced.

Dr. CADDY made some remarks tending to show the dependence of differences in muscular power among animals upon the development of the spinal cord.

Dr. JOHN HARLEY said that probably what had been found in the case of the dog would be equally applicable to man; and he agreed in the suggestion thrown out by the authors of the paper, that the movements of Chorea are probably due to the intrinsic action of the nerve-cells, to which the vascular changes are secondary. He had himself been enabled to produce Chorea artificially in the dog by the administration of the alkaloid cryptopia. The movements came on about half an hour after the absorption of the drug, and lasted until it was eliminated. This could only be by its direct action on the nerve-cells, especially as examination of the spinal cords of animals so treated did not reveal any evidence of intense vascular congestion or stasis.

Proceedings of Veterinary Medical Societies, etc.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting of this Society was held in the London Hotel, Edinburgh, in November,—Mr. C. Cunningham, Slateford, president, in the chair. There were present Professors Williams, Walley, and Vaughan; Messrs. Balfour, Waugh, Rutherford, Brown, Reid, Aitken, jun., Balfour, jun., Young, Dalley, Boyd, Weir, and the Secretary.

Mr. William Cumming, V.S., Edinburgh, was, on the motion of the Chairman, unanimously elected president for the ensuing year, Messrs. Boyd, Young, and Balfour being chosen as vice-presidents. Professor M'Fadyean was elected to fill the office of treasurer and secretary.

Miscellaneous Business.

Principal WALLEY, after calling attention to the desirability of having the rules of the Benevolent Society printed and circulated, referred to the question of professional fees in court cases. In Scotland, he believed, they were only entitled to demand two guineas per day, and a third or second class railway fare, no matter how far they had to travel. In England, he understood, they were empowered to demand six guineas a day and first-class railway fare. He proposed to bring forward a motion on the subject at the next meeting, with a view to obtaining a proper legal opinion on the subject.

Principal WILLIAMS said he had consulted legal gentlemen on this point, and had ascertained that although Mr. Field, of London, had been allowed six guineas per day for attending court, that allowance was made by a local auditor, and was by no means a general rule. The law entitled no man—

not even Liebig—to claim more than two guineas a day for attending court. They could, however, charge for preparing evidence; and in the event of their having to attend a lawyer's office, a big fee could be charged for that. They could also arrange beforehand what the fee should be, and if unable to come to terms, they might refuse to lend assistance. They were not bound by any law to examine an animal.

Principal WALLEY intimated that after this explanation he did not think it necessary to proceed with his motion.

The CHAIRMAN observed that in the local courts he had sometimes to be content with an allowance of 7*s.* 6*d.*

The Inoculation of Pleuro-pneumonic Cattle.

Mr. REID, V.S., Leith, said that as the Contagious Diseases (Animals) Act had been in existence for several years, he should like to have an expression of opinion as to whether it had done any good. He was of opinion that it had been an utter failure, especially in reference to the thirty days' restriction.

Principal WILLIAMS remarked that so long as people continued to buy animals and place them in infected byres, they would always have Pleuro-pneumonia amongst them. It might be viewed as an interference with the liberty of the subject to meddle with people in the purchase of cattle; but it was a question for consideration whether compensation should be allowed to parties who persisted in buying out of infected stock, or in placing cattle in byres where infection existed. The Act had not, in his opinion, been an utter failure, though it had failed to a certain extent. It imposed certain obligations on inspectors, and he had happened to be the first who had been tried on this point. Perhaps the position of inspectors might come to be a matter for further consideration.

Principal WALLEY observed that in a paper read before the Association some two or three years ago, he had pointed out that the thirty days' prohibition was simply a farce. With regard to compensation, in Edinburgh the magistrates or local authority gave only about one-tenth as compensation where people brought in animals that were infected with disease. In fixing any remedy for the evils of the present system, he maintained that the public should not be thought of. In regard to Edinburgh and Leith, he coincided with Mr. Reid in thinking that the Act had not done a grain of good. There was as much Pleuro-pneumonia in Leith now as there had been for the past five or six weeks. Where the Act was properly carried out by the local authority, good results might possibly be arrived at; but this was not the case in the districts to which he had referred.

Principal WILLIAMS spoke of the inoculation experiments going on at the Brown Institute in London. Four inoculated animals had so far resisted the disease that the future would determine whether inoculation would be effectual in preventing the spread of Pleuro-pneumonia. He was of opinion that it ought to have been tried long ago. It had been tried to some extent successfully on the Continent, and the experiments had gone far to demonstrate that inoculation would take the place of slaughter.

The CHAIRMAN asked whether the cattle experimented upon had been placed alongside other cattle.

Principal WILLIAMS replied that the animals were subjected to very severe trials.

Mr. RUTHERFORD, V.S., Edinburgh, alluded to unsuccessful cases of inoculation which had come under his notice; but these, it was explained, were owing to the selection of bad virus. Mr. Graham Mitchell, of Melbourne, deserved the highest commendation for having carried the experiments so near the point of perfection. When the disease broke out in an

Australian herd, the worst cases were slaughtered, and inoculation was proceeded with, the lymph being taken from animals affected with a mild form of the disease. By careful inoculation the disease remained in its mild form, and in this way passed through the herd—the loss being probably not more than 2 per cent. He could not say what the loss had been before, but he had been told that it was as high as 60 or 70 per cent.; and where the inoculation was badly performed it might amount to 20 per cent. An inspector of cattle out in New South Wales—whose name for the moment he forgot—had expressed a willingness to communicate with them on the subject. The inspector referred to was over among them some time ago, and complained that he had been treated here with some discourtesy. In response to circulars issued to owners of cattle in New South Wales as to their experience of the efficacy of inoculation, the replies in favour of inoculation were perfectly overwhelming. In the colony of Victoria he had no doubt inoculation would in a few years become compulsory, as, though it might not entirely prevent loss from disease, it certainly modified it. Nothing would arrest the progress of the disease in this country until the process of inoculation became fairly recognised. He had seen scores of cattle inoculated in Australia, and the intelligent voice of that country, and of those most interested, was strongly in favour of it. Sometimes they found that the disease passed through a herd in such a mild form as to make them feel satisfied it was about as beneficial as the process of inoculation itself. There was, however, no guarantee that the disease would assume this mild form; and where inoculation had taken place, the disease had not made its appearance. So satisfied was he about the efficacy of inoculation, that he had frequently secured lymph and inoculated his client's cattle. The question, so far as regarded this country, was, Would this be legal?

Principal WILLIAMS.—"It is not."

Mr. RUTHERFORD proceeded to describe the process of inoculation.

Principal WALLEY regarded this as a subject deeply interesting to the profession, and spoke of the disfavour into which certain processes had fallen in that district—owing, he supposed, to bad inoculation. Not satisfied with the lungs, some had gone the length of inoculating with pieces of liver; and various processes which had been adopted had fallen into disrepute. The experiments at the Brown Institute were valuable, but he considered them to be too limited to be of much use, as, in a matter of this kind, they had to be careful in receiving evidence. In illustration of this, he observed that it was at one time thought that Foot-and-mouth Disease could not be propagated by the ordinary method, but the reverse was afterwards found to be the case. Without saying that he did not believe in inoculation, he would advise them to be very careful in receiving evidence. He had tried with great success the administration of arsenic; and he looked upon this, when properly applied, as one of the best preventives of Pleuro-pneumonia. It was a question whether pleuro-inoculation produced Pleuro-pneumonia proper; but he should rejoice if by inoculation they might be enabled to prevent a disease which just now formed the greatest scourge from which many parts of the country suffered.

Mr. REID thanked the meeting for the expression of opinion which the introduction of this subject had evoked. He condemned the practice of applying the public money to defray the expenses connected with this disease, and urged that the Privy Council should take steps either to do away with the present Act or to improve it.

The CHAIRMAN would not approve of doing away with the Act, which had several good points. An inspector could choose his own time for declaring a place free from disease, and it was only thirty days thereafter that fresh cattle could be introduced.

Mr. REID referred to a case where an animal had retained the poison for the space of eight weeks before the disease manifested itself.

The CHAIRMAN mentioned, as one of the great hindrances with which they had to contend, that many owners of stock endeavoured to hide the disease as long as they could.

Principal WILLIAMS observed that the theory of Professor Simonds, that Pleuro-pneumonia was not communicated by one animal to another except by actual cohabitation, had been disproved. He (Principal Williams) mentioned cases where, in byres cleaned after infection, and which had been kept empty for six weeks, disease had frequently broken out after that lapse of time. Dutch cattle, for example, came into their town byres; and there, although these byres had been cleaned and kept empty for six weeks, the disease had manifested itself among these foreign cattle. One would be disposed to blame the Dutch cattle; but it was a notorious fact that these cattle—or others from the same shipload—when they went into healthy stocks, showed no symptoms of the disease. That was to him evidence that Pleuro-pneumonia was lurking in their byres. At all events, the thirty days' theory had been entirely knocked on the head.

Principal WALLEY referred to the theory of the spread of the disease by cohabitation, and also to the views of others, who held that it might be propagated by hay or dung. He maintained that it might be propagated in other ways. Only the other day Mr. Aitken, Leith, told him of a case of infection where the animals were separated by a wall. In regard to Dutch cows, Mr. Melvin, the Chairman of the Scottish Chamber of Agriculture, had made a statement before the Committee of the House of Commons, to the effect that this disease was introduced by foreign cattle, and that it spread in the areas into which these foreign cattle were brought. No more misleading statement was ever made before a Parliamentary committee. It had been his (Principal Walley's) lot to examine these cattle as they were landed at Leith. Last year he had examined upwards of a score of carcases; and not only with regard to those which had been destroyed on the boats, but also with regard to the live cattle, he could state that he never saw the slightest trace of Pleuro-pneumonia about them. Frequently he had known them to die from injury on the voyage, but he never found them suffering from Pleuro-pneumonia. His experience went to show that this disease was never introduced by foreign cattle, and, as Principal Williams had remarked, it was only after they had been put into infected byres that they were attacked by the disease. They were then suffering from the effects of having been knocked about on board ship, and were in a condition very favourable for harbouring the virus. The cases in which he had found the disease to originate had been those of home-bred English cattle,—of this he was quite confident.

It was agreed to continue the discussion of this subject at a future meeting.

The Educational Aspects of the Profession.

Professor VAUGHAN read an interesting paper on this subject, pointing out the need that existed for some adequate preliminary educational test, and for the establishment of an examination analogous to what was called the "preliminary scientific" in the London medical schools. The examination for the Fellowship was in his opinion more difficult than it ought to be. Then, again, a veterinary surgeon must be of five years' standing before he could be eligible for a Fellowship of the Royal College,—an interval sufficient to enable him to forget all he knew about science in the abstract, if he were a man in active practice. He objected to the rule by which office-bearers and examiners were exclusively selected from the Fellows of the College, members

being ineligible ; and he submitted that if examiners were compelled to be Fellows, lecturers at least should be under a like compulsion. The exemption of graduates from the preliminary Fellowship examination was also criticised, as well as the different qualifications in vogue with the different colleges. In conclusion, Professor Vaughan deplored the many cases in which there was war to the knife between practical and scientific men.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE last quarterly meeting for the current year was held at the Queen's Hotel, Leeds, on Tuesday, November 13th, Mr. Patterson, Vice-President, in the chair.

The following members were present : Messrs. James Freeman, M. E. Naylor, J. W. Anderton, John Cuthbert, S. F. Fallding, Peter Walker, Parlan Walker, W. G. Schofield, J. W. Axe, Spillman, Murdoch, J. E. Scriven, W. Lodge, T. Greaves, J. L. Faulkner, and the Secretary.

Messrs. Jas. Howell, Rochdale ; Robertson and Britton, Leeds, were present as visitors.

Apologies for non-attendance were received from Prof. Williams, E. C. Dray, Jos. and John Freeman, Geo. Carter, Bale, T. Edmundson, Jas. Lambert, and A. G. Ross.

The minutes of the last meeting were read and confirmed.

Proposed by Mr. JAS. FREEMAN, seconded by Mr. NAYLOR, that Mr. D. R. Sowerby, M.R.C.V.S., of Hull, be elected a member of this Society. Carried.

Mr. PARLAN WALKER then read the following paper on "Quackery in and out of the Profession" :—

"MR. PRESIDENT AND GENTLEMEN,—In conformity with your kind invitation at our last meeting, and with my promise on that occasion, I have now to lay before you a few thoughts for your friendly consideration. You were kind enough to leave with me the choice of my own subject for my essay ; and whilst being sensible of this favour, it has occurred to me that we have had scientific matters favourably before us for discussion so often that I could not bring anything of an instructive character in that domain. But there is a subject which it seems to me in our district we have peculiarly to contend with, and which will take somewhat the character of a novelty at such meetings as this, and that is Quackery. The title of my essay is 'Quackery outside and Quackery inside the Profession' ; and although with some the subject may be considered premature, I am so convinced of its vital influence on the status of the profession, that I venture to bring it before you, not in any personal manner,—far from that,—but that the subject may receive such discussion and notice as this Society is well able to confer.

"Now, it is not my object to say anything derogatory to the Quack : this is a free country, and every man has a right to pursue what course he considers best for his own interest ; and although cases have come before us of flagrant maltreatment, we must remember that it is not every man's privilege to take up residence and pursue the curriculum at the college of training ; yet, undoubtedly, a person may have obtained a certain degree of knowledge of the veterinary science, without undergoing such training, as to insure success in simple cases. Every one has a perfect right to utilize his knowledge. But with reference to his real qualifications the public are very much in the dark, until some complicated case springs up ; and so long as his clients have their eyes open, the profession can have no reason to complain. As to the Quack assuming the title of Veterinary Surgeon, we of course cannot blame him ; but here is a subject claiming our earnest consideration, and it seems to me I may now enter on the second part of the subject, as this matter belongs to our

internal arrangements, and should be within the scope of our correction. Now, when I went to college, and spent my money and time, and at the close received my diploma, I honestly thought that I had got an authorised and protected title of Veterinary Surgeon, and the diploma referred to plainly told me that I was qualified to practise the veterinary art; but I found no protection conferred upon me by what I fondly looked upon as an exclusive authority, and that the title of Veterinary Surgeon could be assumed by any incompetent or unauthorised person, without restriction. Now, this is a state of things which I think, for the credit of the profession, we ought to repressively handle promptly; and I bring it forward to elicit discussion, as I think it very unfair that, after spending my money and time, should I make a mistake I am liable at law, whereas with the Quack, the law protects him, and tells claimants they should employ properly qualified persons. But in nine cases out of ten claimants are ignorant as to the non-qualifications of their veterinary surgeons until the plea is put in in defence. Therefore I think, if the law holds us responsible, it should also protect us from infringement on our privileges and title, as is the case in the sister profession.

"Another feature of Quackery inside the profession is—'No cure, no pay.' Now, when your training and your profession are so lightly valued as to require you to take up cases on such terms, no credit is conferred upon the profession, and no ultimate advantage to the proposer, either with the patient, the owner, or the servant, can possibly accrue; yet such cases are to be met with. Again, we have within the profession gentlemen who practise the homœopathic or the allopathic treatment, as their clients desire. I look upon this as a very base system of Quackery. I think one ought to stand by the one side or the other. The two systems are so diametrically opposite to each other, and the one receives no sanction from our honourable Society. Now, I do not believe in homœopathy; and an influential client of mine styled it, prescribing four drops of nothing to a bucket of water, and dipping the extreme point of the tail in it twelve times a day; and another one in much more expressive terms, but not so polite—showing the absurdity of this mode of treatment. By all means let us pin our faith to one system. There is another species of Quackery I have met with, that I may allude to in passing: and that is hawking medicine and recipes through the country, putting into the heads of grooms and stablemen notions that they have got in their possession specifics for different diseases; and when the absurdity of such notions is made manifest by being put into practice, it does not redound much to the credit of the profession when the retort is made, that the recipe was obtained from so-and-so, often without the sanction and knowledge of the master,—and we all know how difficult it is to uproot prejudice of ignorant minds. I think we should set our faces against this begging system. It would give a ludicrous aspect, maybe, were some of our friends asked to produce their pedlar's licence: they might be weighed on the scales and found wanting. But, seriously, I have often found this detrimental to the dignity of the veterinary profession.

"Mr. President, I have now come to the most vital point of my subject—a point, sir, at which I would fain refrain from going any farther; but in all honour and justice to our noble profession, its members, our Society, and myself, I feel it a bounden duty to bring it to the front. I am about to tell you of the great helm of success of the Quack—his wheel-of-fortune, his fortress, his reserve, his haven, his great boast; and that is, that whenever the Quack sees danger, or that the death of his patient is inevitable, coupled with the confidence of his client being shaken, he has nothing to do but to send a telegraphic message to one or other member of our profession, and on the shortest notice he has him by his side for consultation. It is a fact, and it has come under my own personal knowledge, that

my brother members of the profession are not always sent for to relieve the dying symptoms of the victim of the Quack. Nay, friends, it is when the confidence of the client is on the balance, and the reputation of the Quack at stake, that the sanction of our profession is sought, to bolster up the reputation of the Quack and hoodwink the shaking confidence of the client. It is by those means that the principles and practice of our profession are kept from having their legitimate issue and promotion. This, Mr. President, is a most miserable state of affairs; nevertheless these are facts, and facts are stubborn things and 'chiels that winna ding'; and, sir, if there is one thing more than another in this world that tends to disgrace, to disparage, to undermine, to lower the status, and to fire, blister, and blast the prospects of the veterinary art, it is the qualified Veterinary Surgeon consulting with the Quack—quackery of quackeries in the extreme. If these gentlemen have not any respect for the honourable profession from which they take their title, they might at all events have some little respect for themselves: what is the use of our meeting here from time to time, if this object cannot be attained? An isolated veterinary surgeon here and there is powerless to put down Quackery; and we may well take a lesson from the sister profession, who place a united front against the inroads of Quackery in every shape and form. I yield to no man in my desire and determination to uphold and raise the character of our profession; and whilst it is far from me to introduce an element of discord into our meetings, the weal of this Society is paramount with me; and notwithstanding that at the postprandial discussion on this very subject at one of our late meetings, it came from high authority that Quackery would die a natural death (natural death, forsooth!) how can it so die, when upheld and nurtured in the manner described? Do let us determine, my friends, individually and collectively, to put away this state of things, for in that course is the only remedy; and, for my part, I shall exercise, as I have hitherto done, the whole weight of my humble influence, determination, and notice, to bring about a better issue, to terminate a state of things alike unprofitable to the public and discreditable to ourselves."

A very warm and animated discussion followed the reading of the paper, in which Messrs. Freeman, Greaves, Anderton, Broughton, Cuthbert, Faulkner, Peter Walker, Lodge, Murdoch, Spillman, Axe, and Howell took part.

Ultimately two resolutions bearing upon the subject were passed.

The first resolution was proposed by Mr. BROUGHTON and seconded by Mr. PETER WALKER, and was as follows :—

"That it is, in the opinion of this meeting, highly derogatory to the status of the profession that members should make a practice of meeting and consulting with unqualified men, and instructing them as to the best modes of treatment in cases brought under their notice; and that this meeting expresses its entire disapproval of, and contempt for, the action of such members." Carried.

The second resolution, proposed by Mr. GREAVES and seconded by Mr. BROUGHTON, was to the following effect :—

"That on any member complaining to the Secretary that an unlicensed person is assuming the title and practising as a veterinary surgeon in the district in which the said member resides, the Secretary be empowered to advertise, in such local papers as he may think necessary, the names of those gentlemen who possess the legal qualifications to practise the art of veterinary medicine and surgery." Carried.

Proposed by Mr. MURDOCH, seconded by Mr. FALLDING, that Mr. Walker's paper be sent to the veterinary periodicals for publication. Carried.

A vote of thanks was passed to the essayist with acclamation.

Mr. CUTHBERT then presented the financial statement, showing a balance in hand of £75 10*s.* 3*d.*

The election of officers for 1878 was then proceeded with, and resulted as follows: President, Mr. S. F. Fallding, Wakefield; Vice-Presidents, Prof. Williams, Mr. Parlan Walker, Halifax, and Mr. W. G. Schofield, Pontefract; Treasurer, Mr. Cuthbert, Leeds; Secretary, Mr. Broughton.

A vote of thanks to the retiring officers was unanimously passed.

A paper, for discussion for the next meeting, was kindly promised by Mr. T. Greaves, on "Germs—the part they play in the production of some diseases; also Disininfectants—the part they play in promoting and modifying disease."

Mr. JAS. FREEMAN, of Hull, on behalf of the members, in a few appropriate and sympathetic remarks, presented to the Hon. Secretary a well-filled purse of gold, as a token of their sympathy for him in the long and painful illness he had undergone.

The SECRETARY, who appeared to be quite overwhelmed at the kindness of the members, expressed his thanks in the warmest terms.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above society was held at the Blackfriars Hotel, Manchester, on the 3rd of October, 1877, Mr. T. Hopkin in the chair.

The following gentlemen were present: Messrs. Hart, Elam, Leather, J. B. Taylor, Locke, Faulkner, Tom Taylor, Alex. Lawson, W. A. Taylor, J. Paulden, J. Marshall, H. Ferguson, Jas. Brooks, Alf. Brooks, Beard, Whittle, J. C. Atkinson, C. H. Thomas, and the Secretary.

Letters of excuse were read from Messrs. Peter Taylor, Woods, Reynolds, Cartwright, Prof. Walley, Kenney, Carter, Morgan, Thos. Greaves, T. S. Faulkner, and John Lawson.

Mr. T. S. Faulkner, of Rochdale, was nominated for election at the next quarterly meeting,

Mr. DACRE placed upon the table a specimen of Hydatid of the tape-worm, which he had taken from the thigh of a living rabbit.

Mr. BEARD exhibited a mastiff dog having a tumour on the *membrana nictitans.*

Mr. SAM. LOCKE then read a short paper on "Osteo-Porosis," which he illustrated by showing the bones of the head and other parts of a pony, the subject of the disease. Mr. Locke stated that, in the onset of the disease, the cases exhibited symptoms such as are usually seen in Rheumatism, and that it was difficult to diagnose the disease until the bones of the head became affected. The progress of the disease in this case did not seem to be checked by any mode of treatment.

An interesting discussion followed, in which a variety of opinions were expressed as to the origin and nature of this comparatively rare malady.

The adjourned discussion on "Azoturia" occupied the remainder of the evening. It was pretty generally acknowledged that horses, as well as mares, were the subjects of this disease, which was at one time thought to be of an hysterical character, and noticed under the title of "Hysteria" by the late Mr. Haycock; that the subjects of the disease were animals receiving an abundant supply of highly nutritious food when not "in work"; that the symptoms seen were the result of blood-poisoning, acting more particularly on the nervous system; and that, on examination of the urine removed from the patient, it is always found to be loaded with an excess of nitrogen and albumen.

The treatment recommended was the administration of an oily purgative, combined with sedatives.

Mr. ELAM had found great benefit from the use of hot bran-poultices along the spine.

The proceedings terminated with a vote of thanks to the Chairman.

W. DACRE, *Hon. Sec.*

MONTREAL VETERINARY ASSOCIATION.

THE first meeting for the present session was held at the Veterinary College on October 11th, the President, Professor D. McEachran, in the chair.

In his opening remarks, the PRESIDENT referred to the satisfactory progress which the Association had made during the short time it had been in existence. He reviewed the work of last session, and characterised it as being of incalculable value to the students and practitioners who attended the meetings; several of the papers then read having been published in the veterinary journals, and well received by the profession, both in Europe and America. It was gratifying to know that they had the good wishes of many of the members who, owing to the hundreds of miles which intervened, were unable to be present. It was also gratifying to see so many new members present. He hoped all the students of both French and English classes would become members, so that all might enjoy the advantages of the papers, journals, and library equally.

The following officers were re-elected:—Prof. McEachran, president; Prof. Wm. Osler, M.D., 1st vice-president ; Mr. C. J. Alloway, V.S., 2nd vice-president ; and Mr. M. C. Baker, secretary-treasurer. Mr. F. W. McLellan was elected librarian.

The President presented a copy of Law's "Veterinary Adviser" to the library.

Dr. OSLER drew the attention of the meeting to an unusually large verminous tumour on the greater curvature of the stomach of a horse, caused by the presence in large numbers of *spiroptera megastoma*. Specimens of the worms were taken from the tumour, and exhibited by means of the microscope.

At next meeting, to be held on Thursday, 25th October, J. A. Couture, V.S., was to read a paper on "Hydrophobia," and Mr. C. C. Lyford, V.S., to communicate a case of interest.

ROYAL AGRICULTURAL SOCIETY.

AT the monthly meeting held in November, the Hon. W. EGERTON, M.P. (Chairman), reported that there were twelve candidates eligible to compete for the Society's veterinary prizes and medals, of whom six had already entered their names for competition. Dr. Burdon Sanderson had reported on the experiments as to the protective value of the mode of inoculation for Pleuro-pneumonia employed at the Brown Institution. Four of the inoculated animals had been exposed to infection by co-habitation for many weeks in the same stable with other animals suffering from the disease, and the result was so far favourable that none of them had taken the disease. He, however, deprecated the drawing of any conclusion on the subject until much more extensive experiences had been gained by further trials. Although Mr. Duguid had done his best to obtain opportunities for such trials, he had hitherto experienced the greatest difficulty in finding persons who were

willing to allow their sheds to be used for the purpose. There was reason, however, to hope that these difficulties, like others which had been met with, would be surmounted, and that in another month it would be possible to present to the committee a final report on the important question under investigation. Dr. Sanderson had further stated that Dr. Yeo, of King's College, had almost completed his investigations, and that his report would be ready for presentation in a few weeks. In case it should be thought proper to continue the scientific inquiries at the Brown Institution, Dr. Sanderson suggested that, in addition to any further experiments that might be necessary on the subject of Pleuro-pneumonia, attention should be directed to the important subject of Anthrax. In reference to this disease much new information had lately been gained by scientific experiments in Germany, which, if pursued in this country, would, he believed, yield very valuable additions to our knowledge of the nature and origin of diseases of this class. The Committee gave notice that at the next Council meeting they would move for the renewal of the veterinary grant for 1878. The report was adopted.

Mr. JACOB WILSON moved the following resolution, of which he had given notice :—

"That this Council would respectfully urge upon the Government the desirability of taking, as soon as possible, the necessary steps to carry into effect the recommendations of the Select Committee on Cattle Plague and the importation of live stock."

He reminded the Council of the steps which they had taken during the year in consequence of the outbreak of Cattle Plague, commencing with their resolution passed in March last, which was as follows :—

"That seeing the precautions hitherto adopted for the prevention of outbreaks of Rinderpest and other contagious diseases of animals in Great Britain have not been successful, it is the opinion of this Council that nothing short of the total prohibition of the importation of live stock from European ports will meet the exigencies of the case."

In consequence of the increasing gravity of the position, and the continuance of Cattle Plague, uniform and compulsory measures throughout the country were also advocated ; and in May, on the Cattle Plague extending to Willesden, outside the metropolitan area, a further resolution was passed, urging the Privy Council to supersede the local authorities in the home counties. These resolutions were backed by deputations to the Lord President of the Council; and on every occasion practical results had followed from the action which the Council had taken, although the Lord President felt that he could not do all that was asked without further powers and further information. A Select Committee of the House of Commons had therefore been appointed ; and although the report and the recommendations made by that Committee did not go the whole length of what had been asked by the Council, they went far enough to merit the warm support of the agricultural community. He felt, however, that the Society ought not to stop there, as these conclusions of the Select Committee were at present only recommendations ; and the question arose—Would the Government give effect to them, and make them the law of the land? He thought that it was only proper that the opinion of an important body like the Royal Agricultural Society should be expressed as to the propriety of this step being taken, and he believed that every other agricultural association in the kingdom would act in the same manner. The question was of national importance—more especially to the consumer, who was beginning to find out that "Cattle Disease" was synonymous with "dear meat." Notwithstanding the prohibition of German, Russian, and Belgian cattle, the supply to our home markets was now amounting to a glut, and the producer could not obtain more than

from 8*s.* to 9*s.* per imperial stone; but whether the butcher or the consumer reaped the benefit of these low prices, he was not in a position to say. He concluded by urging that, although it was an unusual course for the Society to petition the Government, and although the recommendations of the Committee did not go to the extent which the Society had asked, he felt that the agricultural interests of the country would be satisfied if these recommendations were to take effect without unnecessary delay.

Mr. BOOTH seconded the resolution. He had attended most of the meetings of the Committee, and could testify to the zeal which its members had displayed in endeavouring to bring out the truth with reference to every branch of the subject, and especially as to an adequate provision of food for the people. He had always pleaded for stronger measures than those recommended by the Committee; but inasmuch as it had been stated by eminent veterinary surgeons that if animals from Germany, Russia, and Belgium could be kept out of the country, and those from other countries could be slaughtered at the port of landing, both Cattle Plague and Pleuro-pneumonia would be prevented from getting across to our flocks and herds, he had somewhat altered his views, and he hoped that the Government would make the recommendations of the Committee in their entirety the law of the country, and thus secure the advantages of increased production both to the producer and consumer, by giving security for the health of their own herds.

Mr. DENT, although he would not oppose the resolution, stated that individually he did not agree with the report of the Committee. No doubt there would be ample discussion in Parliament, where every interest is represented, before the recommendations of the Committee would be made law. He agreed that cattle from Russia, Germany, and Belgium ought to be excluded; and he did not understand why Austro-Hungary had not been placed in the same category, as cattle from that empire could be sent here by way of Trieste; but as regards Spain and Portugal, and other countries which were free from disease, he did not see any necessity for slaughtering their cattle at the port of landing. He considered that the stringent regulations recommended by the Committee, to be enforced in the interior of the country, would be disliked by farmers—except, perhaps, by the owners of valuable herds. As a magistrate, he could testify to the fact that when stringent regulations were in operation, cases of infraction of them were constantly being brought before him, and the delinquents were generally the smaller farmers and graziers.

Mr. HORLEY cordially supported the resolution. Nothing that the Council had done of late years had given more general satisfaction than their action this year in reference to Cattle Plague; and he hoped that the Council would strongly urge the necessity of immediate legislation on the subject.

Mr. BOWLY also supported the resolution, and urged that the great losses which had been sustained in consequence of Cattle Plague should outweigh the inconvenience to which salesmen and petty dealers were put by stringent regulations. The public were beginning to learn that the importation of live stock, so far from cheapening meat, had a directly contrary effect, in consequence of the losses of our own cattle by imported disease.

Mr. CHARLES HOWARD repudiated Mr. Dent's idea that the restrictions advocated would be of special value to Shorthorn breeders. During the last great outbreak there were proportionally fewer deaths amongst the pure herds than amongst the commoner kinds of cattle. In fact, it was the graziers who complained most of the ravages of contagious diseases; and although the agricultural interest was the one which the Society was established to support, he would recommend the adoption of the resolution in the interest of the community generally.

Mr. MARTIN, as one of those who did not possess one of the valuable

herds to which Mr. Dent had alluded, was a warm supporter of the resolution. All shades of opinion were represented on the Select Committee, and he looked on their recommendations as a compromise. He thought, therefore, that the Society ought not to sacrifice the opportunity of obtaining improving legislation, although the Committee had not gone to the extent which the Council desired. His experience as a magistrate was that dealers and butchers were the offenders against regulations having for their object the prevention of contagious diseases of animals.

The Hon. W. EGERTON, M.P., as a member of the Committee, stated that the recommendations of the Committee were not a compromise. On the contrary, he regarded them as strong, stringent, and decisive. The last paragraph, it was true, was carried against the Chairman, and doubtless some thought that it would prevent the Government from taking any action in reference to foreign cattle; but he trusted that the Society would urge the Government not to be afraid of the effect of that paragraph, and that they would uphold the necessity of restrictions on home stock as well as on foreign stock, and press the Government to introduce a large and comprehensive measure on the whole subject.

Mr. RANDELL, as representing the class which, according to Mr. Dent, would not like the restrictions just alluded to, and as having to do with the occupiers of 40,000 acres under similar circumstances, declared that they had the same strong feeling upon the necessity of proper regulations being made as to home stock, and upon doing away with the importation of live animals, and substituting a dead-meat trade, as the owners of high-bred stock. In his opinion, the only way to meet the increasing competition of America was by breeding more animals, and this they could only do if they felt that their stock had ceased to be subject to periodical attacks of imported disease. Farmers, so far as he knew them, would cheerfully submit to regulations themselves, if they were accompanied by such security as they desired. He did not look upon the report as a compromise, but as the result of an arbitration between the farmers and the consumers, after a most careful, patient, and exhaustive inquiry. He hoped the Council would be unanimous in asking the Government to carry the recommendations into effect, and thus set an example to the other agricultural bodies, which, doubtless, they would at once follow.

The PRESIDENT regretted that Mr. Dent had laid such stress upon the feelings of owners of valuable herds. For himself, he could say that he had entered into the question more on behalf of the cotter with one cow, or the small farmer with five or six, than on behalf of the rich owner of a valuable herd, for the small man could not afford the loss of his one cow so much as the Shorthorn breeder that of his entire stock; and throughout the whole of the proceedings the bearing of the question upon valuable herds had not been brought prominently forward. Abundant evidence had been given to show that the falling off in the breeding of animals revealed by the statistics was caused by the fear of contagious diseases, and therefore the more the dead-meat trade was encouraged the better, as it removed the necessity for the importation of the live animals which brought these diseases with them.

The resolution having been put to the vote, it was carried unanimously, and the President was instructed to ask the Prime Minister to receive a deputation from the Council in support of it during the period of the Smithfield Show.

Jurisprudence.

"ROARING" NOT UNSOUNDNESS.

AN interesting action was brought before the Hartlepool County Court, on November 2nd, for the recovery of the difference between the alleged value of a horse (£35), and the amount for which it was sold, in dispute (£18).

The plaintiff, for whom Mr. Marshall appeared, was Mr. Batty, horse dealer ; and the defendant Mr. W. Seal, ironmonger, who was represented by Mr. Ralph Bell.

According to the case for the plaintiff, he offered the defendant a horse for sale for £35, and eventually the defendant agreed to buy it, "and take his word for it." He asked for a warranty, which plaintiff declined to give. £9 was paid at the time ; and when defendant wished to return the horse, plaintiff was only willing to do so provided he kept the £9, or let him have another horse instead. The horse was a roarer, but a good worker.

Examined : He (plaintiff) received notice that the horse would be put up for sale, and on this being done it realized £18. He declined to warrant the horse, as he knew it was a roarer. It had Stringhalt, which Mr. Seal must have seen at the time, but he made no comment upon it.

Robert Lax, who purchased the horse, said it was a good worker.

The defendant deposed that the horse was sold to him as "sound in wind and limb." Finding that the animal was unsound, he told plaintiff that he should return him, as he was broken-winded. A grey horse was offered him in exchange, but he refused to accept him, as the plaintiff had not dealt fairly with him before.

Mr. Noddings, the defendant's foreman, who was present at the sale, corroborated.

Mr. Peele, V.S., deposed that the horse was a roarer, and had Stringhalt, and was not worth £30.

His Honour said that roaring would not affect a warranty unless it affected a horse's pulling powers, and the Stringhalt was palpable ; he therefore found for the amount claimed, less the sum paid into court.

Army Veterinary Department.

THE following movements of army veterinary surgeons were about to take place in India, when the last mail left :—

J. Mills, Royal Horse Artillery, to proceed from Allahabad to Bareilly, for duty with Royal Artillery.

S. Gillespie, Royal Horse Artillery, to march with F battery A brigade (late B battery B brigade), Royal Horse Artillery, from Umballa to Campbellpore, there to be stationed.

J. Burton, Royal Horse Artillery, to march with I battery A brigade (late D battery B brigade), Royal Horse Artillery, from Meerut to Rawal Pindi, there to be stationed.

T. J. Symonds, to march to Meerut with F battery C brigade (late A battery F brigade), Royal Horse Artillery, give over veterinary charge to Veterinary-Surg. Gillard, 15th Hussars, and then proceed with battery to England.

M. F. M. Case, to march with I battery C brigade (late E battery F

brigade), Royal Horse Artillery, from Campbellpore to Peshawur, there to be stationed.

R. D. Graham, Veterinary Department, will march with G battery A brigade (late B battery F brigade), Royal Horse Artillery, from Peshawur to Umballa, hand over veterinary charge to Veterinary-Surg. A. E. Queripel, Royal Horse Artillery, then proceed to Barrackpore, and march with B battery 4th (late 11th) brigade, Royal Artillery, to Allahabad.

H. Thomson, Veterinary Depôt, to proceed from Muttra to Meerut, and march with B battery 3rd (late 8th) brigade, Royal Artillery, from Meerut to Barrackpore, there to be stationed.

J. P. Adams, Veterinary Department, to march with E battery 4th (late 11th) brigade, Royal Artillery, from Allahabad to Mooltan, there to be stationed.

C. Clayton, Royal Artillery, to march with E battery 3rd (late 8th) brigade, Royal Artillery, from Ferozepore to Peshawur, hand over veterinary charge to Veterinary-Surg. Case, Royal Horse Artillery, and return to Ferozepore with H battery 3rd (late 8th) brigade, Royal Artillery, there to be stationed.

W. A. Crow, Veterinary Department, to proceed from Muttra to Meerut, and march with F battery 3rd (late 8th) brigade, to Dinapore, hand over veterinary charge to Veterinary-Surg. Goddard, Royal Artillery, and return to Meerut with C battery 4th (late 11th) brigade, Royal Artillery, there to be stationed.

G. F. Davis, Veterinary Department, to proceed from Jullundur to Barrackpore, and march with A battery 4th (late 11th) brigade, Royal Artillery, to Agra.

Obituary.

We much regret to learn that Mr. W. Dewar, M.R.C.V.S., of Midmar, Aberdeenshire, died on October 18th, at his residence, Bethlen, after a brief illness. Mr. Dewar was highly respected by his colleagues in Scotland, as well as by a very large number of friends in Aberdeenshire. His reputation as a veterinary surgeon stood very high, and he was a valued contributor to this journal. He graduated so long ago as 1839. Among other testimony to his worth, we may quote the following notice of his demise from the *Aberdeen Daily Free Press*:—"Mr. Dewar, who was a native of the locality, was a man of very considerable natural sagacity and force of character. These qualities, with the addition of acquired skill and extensive reading of the literature of his profession, made him a thoroughly competent and very successful veterinary practitioner, in which capacity he had for many years acted over a wide district. Mr. Dewar was also a man of large general intelligence, and one who took great interest in all progressive movements in the locality where he lived. He was a member of the School Boards of Cluny and Midmar, and frequently contributed to the journals of his profession, as well as to the local newspapers."

One of the senior members of the profession, Mr. Thomas Mays, of Wymondham, has met his death under the most painful circumstances, having been murdered by a workman, when endeavouring to interpose between the miscreant and another man, who was also killed. Mr. Mays either had retired, or was about to retire, from practice; and from his long-continued and successful career, he was much esteemed in that part of Norfolk which had for so lengthy a period benefited by his skill and attention. He graduated February 1st, 1820.

We have been informed of the death, by drowning, of Mr. S. G. Going, 1st United States Cavalry, at California. Mr. Going graduated so recently as April 19th, 1870, and is known to our readers as the author of an interesting paper on "Glanders among Cavalry Horses at California." He perished in a generous attempt to rescue a brother officer from drowning.

The death is likewise reported of Mr. F. H. R. Spratt, late Royal Artillery, who graduated in 1855; also that of Mr. R. Olden, Cork, who graduated in 1839, and of Mr. W. Cockburn, V.S., 112, North Street, Glasgow, aged 74.

Notes and News.

THE BERLIN VETERINARY SCHOOL.—The Budget of the German Minister of Agriculture, in providing an ordinary expenditure of 2,463,000 marks for the support and encouragement of agricultural interests, allots to veterinary schools and veterinary works generally 587,815 marks, of which 44,395 marks are devoted to the Berlin Veterinary School.

VETERINARY HONOURS.—We observe with much pleasure that Professor Röll, Director of the Imperial Veterinary Institute of Vienna, has had the Russian Order of Stanislaus, second class, conferred upon him; also that Professor Generali, of the Milan Veterinary School, has been made a Chevalier of the Italian Order of the Crown.

THE RUSSIAN ARMY.—We learn that the medical staff with the Russian Field Army, now on the Danube, consists of 849 physicians, 3285 assistant-surgeons, 146 dispensers, and 123 veterinary surgeons.

THE BRAIN OF CANIDÆ.—At the last meeting of the British Association, Mr. R. Garner read a paper on the size, etc., of the brain of the canidæ. From measurements of brain-capacity, and from casts taken from the interior of the skulls of numerous dogs, the author drew the conclusion that the size of the brain did not correspond very closely with the size of the animal. He was disposed to argue the descent of the domestic dog (he did not treat of the origin of the dog primitive) from one or more dogs, as no dog had as large a brain as the wolf, nor one so small as the jackal, from both of which the descent of the dog had often been inferred. The size of the brain in the dog varied very little in the different-sized animals—that of a Newfoundland dog being very little larger than that of a terrier; and the intelligence of the animal did not increase with the size of the dog, though in specific species there was an increase of intelligence in proportion to the increased size of the brain. He could not connect the power of dogs with any peculiarity of brain organization, but he found that in dogs with fine scents the front brain was elongated or enlarged.—Professor Macalister (of Dublin) desired to give the results of his examination of the brain of the celebrated greyhound, "Master M'Grath," and stated that after examining the brains of a great many other greyhounds, he was surprised to find that "Master M'Grath's" brain was a good deal heavier than that of any of the others, and that it was not only larger, but that the convolutions were much more complex. He had also found that in complexity of convolutions the brains of dogs varied as much as those of human beings. He did not agree with Mr. Garner that the proportioned weight of the brain of the wolf was greater than that of the dog,—the result of his investigations in this respect being to place the brain of the pointer first, those of the mastiff and setter next, whilst that of the wolf took the third place. The greyhound had a very small brain in comparison with its size. He had found in the case of "Master M'Grath" that the heart was exactly double the weight of that of an

ordinary greyhound; and he would suggest whether it might not be that the great speed of that animal was due to this fact, it being a curious coincidence that the famous horse, "Eclipse," had a heart two-thirds heavier than that of any horse of his own size.—Professor Allen Thomson put it that, in the case of the size of the heart, there might be a way of looking at the question that was exactly the inverse of that in which it was regarded by Prof. Macalister. He should be rather inclined to think that the large heart was the result of the running, and not that the speed was produced by the size of that organ.—Mr. Garner pointed out that, of course, the question of structure must be considered as well as that of size, otherwise the elephant and the whale might be supposed to have greater brain-power than man.

Skin of the Dog.—According to Dr. Stirling ("Reports of the Royal Saxon Academy of Science" for 1876), in the skin of the dog, as in the human skin, whilst the hair-follicles, fat-lobules and sebaceous glands have each a separate blood-supply from a small artery, the connective tissue between the fat, muscles and glands is destitute of capillaries. The sweat-ducts (the popular idea that in dogs there are no sweat-glands is a mistake) open into the hair-follicle above the sebaceous gland, but at some distance from the epidermis. The sweat gland is composed of a layer of flat cells, a structureless membrane on which these lie, and then the cells of the gland. The *erector pili* is composed of elastic fibres, which spring from a network which surrounds the hair-bulb, and which pass in a tract to the surface of the cutis, where they spread out and join the other fibres of the part. Between and among these elastic fibres the smooth muscle-cells are insinuated.

Forage Cakes for Horses.—The *Allgemeine Zeitung* says that feeding-cakes for horses are made by machinery at St. Petersburg on a large scale. The cakes are prepared from ground oats and grey pea-meal, to which a little hemp oil and salt has been added, and baked in thin biscuits about four inches in diameter, being previously perforated in numerous places, so as to facilitate the process of softening them when required for use. Experiments made among the troops have shown that, though the horses get somewhat slimmer than usual upon this dietary, their strength is in no way impaired, and they are equal to just the same amount of exertion as before. The biscuits can be given dry, or soaked down in water—the horses eating them with relish in either form.

Hydrophobia.—Dr. Samuel Pratt, M.D. and F.R.C.S., writes to the *Times* from West Malling, near Maidstone, as follows: "On Wednesday, Oct. 24th, I was sent for by my assistant to see a lad, aged seventeen, a farm servant, stated to be suffering from severe symptoms of Hydrophobia. My assistant had seen the case for the first time a few hours previously; and symptoms had existed from the Saturday before, although not recognised. The paroxysms of spasm were exceedingly severe, with total inability to swallow either solids or liquids, although the lad, a fine, strong fellow, struggled well with the disease. He had occasional wandering delirium, but gave rational, quick answers to questions. The case ended fatally two hours after my visit. The dog by which the boy was bitten one month previously exhibits at present no signs of Rabies! The bite was on the proximal phalanx of the thumb and the palm of the hand."

Condemned Flesh.—We learn that 35,000 lb. weight of flesh derived from animals which had suffered from Contagious Pleuro-pneumonia was condemned in Leith during the last twelve months.

No Veterinary College in Ireland.—Dr. Mapother, in his opening address at St. Vincent's Hospital last week, said, "Sir Astley Cooper was for many years, in conjunction with Sir B. Brodie, Sir C. Bell, Babington and

Bright, Examiner in the Veterinary College ; and its president, Coleman, he calls 'for forty years his best made friend.' It is often wondered at that in this country we have no institution for the study of veterinary science ; and, just now, the carrying out of the Cattle Diseases Acts gives abundant work for those qualified by examination elsewhere in bovine, and indeed in human, medicine."—*The Irish Sportsman.*

Effects of Disease on the White Hair of a Cow.—From the *Deutsche Landwirthschaftliche Presse*, we learn that a black and white cow that had been out at grass some time was one evening observed to be suffering from loss of appetite, constipation, suppressed secretion of milk, and pain in the hind-quarters. On administration of salts and clysters, hard fæces streaked with blood were discharged. The next day fever, hurried breathing, thirst, and general constitutional disturbance had ensued. Coagulated blood was removed from the rectum by the hand. Drenches of tartrate of potash and saltpetre promptly given, and backed up with clysters, led to the apparent recovery of the patient in a few days' time, but there came on increased sensibility and warmth of most parts of the skin, the hair upon it standing, as it were, on end. The epidermis separated completely from the true skin in these places, and shrank up from their edges towards the middle line, leaving bare and raw patches behind. In the course of a fortnight there was no trace left of white skin or of white hair over the whole surface of the animal. Even the smallest isolated spots of white hair and skin were thus affected, while the black part of the cow remained unchanged throughout. The epidermis reappeared but very slowly, and for at least three months scarcely a white hair was to be seen.

Cattle in Russia.—According to a report issued by the Central Statistical Commission of St. Petersburg, there are about 28,600,000 oxen in the Russian dominions of the Czar, or 35 head per hundred of the population. In the southern provinces cattle play a still more important part—reaching a proportion of 111·8 head per hundred of the population in the country of the Don Cossacks. The exportation of beasts is increasing hugely, the value of cattle crossing the frontier having been 1,250,000 roubles only in 1850, as against 8,000,000 in 1869 and 12,000,000 in 1875-6. The price of beasts intended for slaughter varies from 77*s.* to 143*s.* in different parts of the empire. Of the total number of cattle exported, 45 per cent. find their way to Germany, 43 per cent. to Austria, 11 per cent. to Turkey and the Danubian Principalities, and 1 per cent. only to other countries. The trade with Turkey is, of course, interrupted at present.

Mutual Satisfaction.—An inquiring man thrust his fingers into a horse's mouth to see how many teeth he had. The horse closed his mouth to see how many fingers the man had. The curiosity of each was fully satisfied.

Cattle Plague in Russia.—Telegrams to the St. Petersburg papers state that the Cattle Plague, which during the present summer has wrought such dire havoc among the herds on the southern steppes, has now reached the Polish provinces, and is rapidly approaching the frontier. The losses sustained by the Russian peasantry since the Plague crossed the Ural mountains two years ago are immense. News is telegraphed from Tiflis, that the authorities fear that the unparalleled prevalence of the Plague has caused the entire bovine race of Caucasia to become extinct. The scourge prevails at the seat of war in Bulgaria and Asia Minor, and has also appeared at St. Petersburg.

Tenacity of Animal Life.—An extraordinary instance of the tenacity

of animal life has occurred at Flintstow farm, near Pembroke, in the occupation of Mr. George Lewis. Sixteen days ago a pig was missed from the farmyard, and though every search, far and wide, was made for it, it could not be found, and it was concluded that it had been stolen. However, on Friday, some masons who were executing some repairs at a brick-kiln on Mr. Lewis's farm, discovered in it the lost pig, which had fallen into the kiln and was unable to extricate itself. During the sixteen days the pig had no means of obtaining sustenance of any kind. When rescued from its imprisonment it was able to eat, and did not seem at all weak, or in a very bad condition, considering the time it had been deprived of food.

Correspondence, etc.

[We publish the following correspondence, owing to the great interest and attention the subject at present commands; as well as to testify to the fact that Comparative Pathology is likely to receive a far larger share of notice than it has hitherto done in this country. For years we have laboured earnestly and incessantly in this direction—with what success the medical and public papers now show. We value this testimony most highly, and also that of the Regius Professor of Medicine in the University of Oxford (Dr. Acland), whose efforts to found a Chair of General and Comparative Pathology in that seat of learning must receive our hearty good wishes for their success. We allude to the public acknowledgment of our services on behalf of veterinary science and general pathology in no vain or egotistical spirit, but merely to point out that we believe we have at length fairly succeeded in overcoming the almost insuperable obstacles which stood in the way of obtaining a recognition of the claims of our department of medicine, and in raising it from a very degraded position somewhat nearer to the point which it must eventually occupy. Twelve years ago our letters on the Cattle Plague were denied insertion in the *Times*, and veterinary surgeons were designated as "ignorant and barbarous." Our improved status to-day must be a cause for sincere congratulation, and an incentive to continued efforts.]

RABIES AND HYDROPHOBIA.

To the Editor of "The Times."

SIR,—I have read with much interest the correspondence on Hydrophobia in your columns, and also the leading article on this subject in *The Times* of October 31st. Perhaps there is no malady which at present attracts more attention from the general public, nor one which is invested with more dread, than the disease in question. Much of the mystery and fear which surround it is due to popular ignorance of it; and even among those who ought to know better, this terror and want of information are, unhappily, very manifest. Some years ago I, in *The Times* and elsewhere, pointed out that the so-called "Hydrophobia" was on the increase in England, and I ventured to prognosticate that it would largely increase unless measures were devised to check it. I was able to do so merely from the knowledge that this disease is maintained and diffused like other contagious or inoculable maladies. Since my earliest letters and writings appeared, nothing has been done to limit or suppress the scourge. Consequently, an outbreak which commenced in Lancashire in 1869 has been allowed to extend itself, until its effects have been noted with terror in the North of Scotland and in North Devon, where, until recently, it had been unknown to the present generation; and in London, in Lancashire, and in Yorkshire a panic almost exists because of its

prevalence. Much of the dangerous superstition and ignorance prevailing with regard to Rabies is due to the unpardonable neglect of comparative pathology in this country. Those who have carefully studied this malady will readily acknowledge that we know more of its nature, of its symptoms, and of the means by which it may be prevented, than we do of some special human disorders which every year claim a far larger number of victims. Few maladies to which animals are liable have been more closely studied by those whose special province it is to minister to the diseases of the lower creatures, than has this disease. And if the results of this study could be made available, there would not be much occasion for panic, nor apology needed for the very confused and even absurd notions entertained with regard to Rabies by some of those who have confined their observations to the human species. In the first place, those who have had the opportunity of witnessing the disease as it manifests itself in animals and man, will readily grant that it is specifically distinct from Tetanus ; in fact, it is as distinct, pathologically, as are Tetanus and Smallpox in man. Tetanus arising from wounds is not transmissible, and its symptoms are unmistakable and definite. Rabies is a transmissible disease, and can be produced, experimentally, by inoculation. When transmitted by inoculation, its manifestations, either in man or beast, are so marked and peculiar, that the veriest tyro in medicine, human or comparative, should not mistake it. The symptoms are as different as those of two very dissimilar diseases can be. To assert that the malady is, or can be, of mental origin, is as much as to maintain that Smallpox is an emotional disease. Very many more animals die of Rabies every year than human beings, and this after being inoculated for several weeks. What has mental anxiety or emotional influence to do with its production in the case of horses, dogs, cattle, sheep, pigs, and even fowls? And what about Hydrophobia manifesting itself in young children weeks or months after inoculation? The real fact is, that the disease is specifically distinct from all others, has no relation whatever to Tetanus, and cannot be developed by fear, despondency, or any other emotional influence, but is produced by accidental inoculation, and may be reproduced to any extent by experimental inoculation in animals, which are not conscious that they are to have been inoculated. All this knowledge is already to hand, and for years I have insisted upon its being utilized in devising preventive or suppressive measures ; but in vain, as the present panic now testifies.

The latency of the malady is certainly indefinite, and sometimes very protracted ; but it is not exceptional in this respect, and some other human and animal disorders are as eccentric.

I cannot see that further experimental investigations into the pathology of Rabies would aid us in suppressing it. We know perfectly well upon what its continuance and extension depend, but we do not utilize this knowledge in the slightest degree. There are certainly some obscure points with regard to its pathology which scientists are endeavouring to unravel, but they have no relation whatever to sanitary police measures, and if elucidated to-morrow would have no effect in checking the occurrence of the dread disorder.

So far as curative measures are concerned, those who know most about the malady will probably have least faith in the thousands of remedies which have been proposed, as all have failed. But we dare not despair of a remedy, and certainly curare is well worthy of an extensive trial. In July, 1876, I published in the *Veterinary Journal*, of which I am editor, the account of Dr. Offenburg's successful case alluded to in your leading article of October 31. Another instance in which the same potent drug appears to have also acted beneficially is recorded in the *Veterinary Journal* for January of this year. Dr. Watson, surgeon to the Jersey City Charity, New York, successfully

treated a case of Rabies in man by the administration of woorara or curare, and strychnine. After what one knows of the failures of reputed remedies for the cure of Rabies, it would be folly to assert that in curare we have found an agent which may, if not in all, at least in some cases, prove efficacious, until many recoveries through its employment are recorded. Yet, from the two instances in which its use has been attended with benefit, and from the well-known physiological action of the drug, there is every reason to recommend its being fairly tried in the attempt to cure what, it must be confessed, is still an incurable and most painful disease.

Unfortunately, from the absence of sanitary or preventive measures—which, after all, are the wisest and best—there will be ample opportunity to give curare of any other supposed remedy a full and decisive test.

I have the honour to be, sir, yours respectfully,

GEORGE FLEMING,
Veterinary Surgeon, 2nd Life Guards.

Regent's Park Barracks.

COMPARATIVE PATHOLOGY.

To the Editor of "The Times."

SIR,—In *The Times* of Saturday last, your correspondent, Mr. Fleming, in an interesting letter, complains of the too scant study of Comparative Pathology in Great Britain. It is not for me to dispute this allegation; nor am I quite sure, looking at the papers in the *Veterinary Journal*, and those published by the Royal Agricultural Society and elsewhere, *but* that I should admit the charge as fully as he makes it. That there is yet room for progress in this, as in every other department of biology, no one can doubt. It may, therefore, interest your readers, as well as your correspondent, to know that the question of founding a Chair of General and Comparative Pathology, under conditions, has long been before the University of Oxford. It has been quite recently pressed in a practical form on the Royal Commissioners, who have been sitting here, and it is to be hoped the proposal may be successful. It is hardly possible that veterinarians would mistake the suggestion for one to found a Veterinary Chair, which would be far too limited in its scope. But, lest that should happen, it may be added that it has been thought desirable not to forget that, in completing arrangements for the scientific study of Human and Comparative Biology, the study of the general relation between the diseases of animals and those of man—General and Comparative Pathology—could not be omitted. The decay and death of animals are as much a part of their natural history as their birth and their growth. The mass of knowledge which is accumulating as to the pathological states of animals lower than man is too well known to require observation. The foundation of a purely scientific chair in this place for promoting inquiries and co-ordinating results in this direction, could not but secure great practical good. Nor are the men wanting who can grapple with so vast a question, and fill the office with honour and advantage to the world. Apologizing for the length of this letter,

I am, sir, your obedient servant,

HENRY W. ACLAND,
Regius Professor of Medicine.

Oxford.

To G. Fleming, Esq.

DEAR SIR,—You may, by chance, see a letter from me in to-day's *Times*. If not, I venture to ask your perusal of it. I hope to further the object of

your letter, and indeed of your long continued labours. An unfortunate *but** has been put in the seventh line of the letter, giving the CONTRARY sense to what I intended, which was to acknowledge the labours of your Journal, and of the Royal Agricultural Society's Journal.

I am, dear sir, yours faithfully,

Oxford, *Nov.* 8, 1877. H. W. ACLAND.

ANOTHER APPEAL FROM THE ARMY.

To the Editor of the VETERINARY JOURNAL.

SIR,—More than five years ago we were informed by the late Principal Veterinary Surgeon that a new warrant was before the authorities, and that it was anticipated that it would be promulgated without much more delay. Every year—almost every month—we are told that the pay and position of army veterinary surgeons is receiving the serious consideration of the authorities; yet here we are, in the same state of suspense, in the year of grace 1877. Has it ever struck the army veterinary surgeons as somewhat strange, the rapidity with which a royal warrant for the members of the sister profession in the service is matured? Not very long ago a new warrant for the medical profession was issued. It did not answer the purposes for which it was intended; and now we find, or are told, that another scheme has been approved of.

I do not introduce the subject in any spirit of jealousy. On the contrary, I think we must all feel pleased at finding the claims of the medical officers of the army attracting due attention. My object in alluding to the matter is to point out the carelessness and indifference with which we, as a body, are treated. Many unjustly censure the head of the Department for this painful state of affairs, but we should not forget that he is powerless to act, and can only represent our grievances, and propose measures to be acted upon by the Secretary of State.

What can be more disheartening than Mr. Hardy's reply to Captain Home in the House of Commons on July 2nd? It was an easy way of evading a direct answer to the question. Let me recall the reply that was given to a similar question about twelve months ago. At that time we were told that as soon as the actuaries had completed their duties in connection with the great scheme of army retirement, Mr. Hardy hoped to place the matter of the veterinary surgeons in their hands. Now, we can all see how far Mr. Hardy has kept his promise. Six months hence perhaps Mr. Hardy will tell us that many more new schemes are under consideration.

It is needless to occupy your valuable space by recapitulating grievances. These subjects are worn threadbare, and it only gives rise to discontent and heartburnings to recall them. It remained for the August number of the *Journal*, however, to show the majority of us what an exalted (?) position we hold in the eyes of our gracious Queen. "While all his brother officers, with whom he associates at mess and everywhere else, may be presented at court, the army veterinary surgeon—even the head of the Veterinary Department—is denied this privilege." Really, the temptations are great to write strongly; but where is the good to come from? Certainly the inducements held out to young gentlemen to come forward and fill the fifteen vacancies that exist at present are very great! Those who enter the Department hereafter will have little to complain of, as they can scarcely accept their position through igno-

* We have printed it in italics, in Professor Acland's letter to the *Times* on "Comparative Pathology."

rance of the many galling slights they are destined to suffer. This has not been the case with the majority of men at present in the Department: indeed, I may add, of all—for from whence was any information as to our social position, etc., to come? We possess a commission, yet we are unworthy of being presented at court! The members of the Department—many of the senior members—have seen much active service in the field, yet none of them have been deemed worthy of special favour. The members of the sister profession are appointed physicians and surgeons to the Queen: why cannot some similar honour be created in connection with the royal stud for deserving veterinary surgeons, both in the army and in civil life? There is not a member of the Department the recipient of a good service reward, or any other mark of royal favour. Can this state of things last? or shall we always have to submit tamely to the will and pleasure of the Secretary of State? The remedy is not in the hands of the army veterinary surgeons: they unfortunately have, to use a vulgarism, "made their beds and must lie on them." The remedy lies in the hands of the parents and guardians of the young aspirants to veterinary honours, and of those who are yet free to make a name and fortune outside the hallowed domain of an army career.

Probably there are many army veterinary surgeons who would gladly rest contented, were they only to receive the boon of as much pay as would enable them to live decently. Had I a brother desirous of entering the Veterinary Department of the army, I would rather see him enter the ranks as a private soldier than commit such an error.

A very serious, and, to my mind, a very just charge, has been laid at the door of the teachers in our various veterinary schools. It has been truly said that these gentlemen, knowing the disadvantages which the army veterinary surgeons labour under, have never raised their voice to warn young men against adopting the Service as their home. Had they done so, we should long ere this have had ample attention bestowed on our claims. Our grievances would have been immediately removed when it was found that the public were not ignorant of the pay and position of the army veterinary surgeon. Let us only pause and ascertain what followed when the teachers of the various medical schools took up the cause of the army medical officers. The examinations were held, but the candidates fell far short of the usual numbers,—in fact, there were fewer candidates than there were vacancies.

But why, in the name of common sense, should any young fellow pine after an army career? What advantages does it offer that are not within his reach, if he labours for them, in private life? The army veterinary surgeon is a sort of bird of passage: he is in the north of Scotland or Ireland to-day, and in six weeks hence you may find him at Peshawur, in the north of India. The civil practitioner settles down wherever he pleases; he forms his own circle of friends, and he has before him a wide sphere for the cultivation of social and useful qualities. In proof of this, only think of the many honoured names that one may call to mind.

What is the goal for which the army veterinary surgeon is striving? To be a Staff veterinary surgeon. A worthy object; but alas! how few gain that haven of comparative independence! Very few: while how many have to suffer the pangs of disappointed hopes, of ruined fortunes, and of services unacknowledged! This is not an exaggerated picture. If you doubt it, ask some of those officers who entered the Service twenty-two years ago. Compare the position of the army veterinary surgeon of twenty or twenty-two years' service with that of the civil practitioner of the same period. Unless the latter has misspent the best part of his time, he forms, as a rule, a great contrast to his brother in the army.

What a pity it is that young gentlemen about to enter the army, and who

are *determined* to live on their pay, never bestow a thought on the time when the milliners' bills will have to be paid, when sons and daughters will have to be educated, when the daughters will have to be taken to balls and dinner parties! But this is too gloomy a picture, and our young friends will only smile at it. Yet it is a fact, nevertheless, and a serious one too. However, fourteen shillings and sixpence per diem will do wonders, especially in England, where things are so wonderfully cheap!

We have now a gleam of hope that something may be done to improve our position. The fact of fifteen vacancies in so small a department, is indeed ample proof of the bad odour into which it has fallen. We would hasten to warn young gentlemen not to be led astray by vague promises, such as those that have been so often made and as frequently broken; above all, we would advise them not to enter the army till they have a positive guarantee that their position as veterinary surgeons will be made much better than it is at the present time; and that guarantee must, we think, take the shape and form of a royal warrant for the "Veterinary Department of our Army."

I am, sir, yours obediently,
"MAX."

SPURIOUS TITLES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I am desirous of knowing whether a graduate of an Edinburgh College has the right of styling himself a "Member of the Royal College of Veterinary Surgeons, *London and Edinburgh*"? Or, on the contrary, being a London graduate, whether he is licensed also to subscribe himself member of R.C.V.S., London and Edinburgh?

This is done, as you know, by some veterinary surgeons; but it looks so absurd to me that a graduate should advertise in that way simply to mislead the unwary public, making them believe he has passed both the London and Scotch schools, whereas he simply holds the diploma of one college. London and Glasgow never go together; then why London and Edinburgh? I am sorry to trouble you with this matter, but it annoys me; and I will be grateful for any information you can give me through the columns of the *Veterinary Journal.*

I am, sir,
Yours most respectfully,
"REBUS."

[We are quite aware that the practice alluded to by our correspondent is somewhat prevalent; but it is not to be commended, as it is incorrect. Only those who have obtained the diploma of the Royal College of Veterinary Surgeons have the legal right to the distinctive affix of M.R.C.V.S. There is no such distinction as M.R.C.V.S.E. or M.R.C.V.S.L., there being only one Royal College of Veterinary Surgeons in the three kingdoms. We have frequently drawn attention to this subject.]

TO CORRESPONDENTS.

J. B. W.—We are certainly of opinion that, in the discussion of scientific and professional subjects, all personal allusions of a malevolent or unfriendly character should be omitted. They are never productive of good, but only too often do harm, and give rise to ill-feeling. They certainly never further the objects of science or the cause of truth; and, to all but perhaps those immediately concerned, they possess no interest whatever. In this direction, we may quote the lines our witty contemporary, *Punch,*

published with reference to a discussion of this kind regarding the "Germ Theory," in which a celebrated professor and a medical man took a large share. The advice is applicable to the remarks of our correspondent :—

"Let bigots write with sneers of spite,
And dogmas argue so ;
Let priests and parsons, differing, fight,
As 'tis their nature to.

But, Sages, you should never let
Such female passions rise ;
Your thinking minds were never made
To bandy taunts unwise.

Let calm through all your questions run,
All your debates be mild ;
Keep your discussions, every one,
By rancour undefiled.

With patience gentle as a lamb,
Your arguments pursue ;
Call not each other's theories 'flam,'
But prove the sounder view.

Look up to Truth all ends above ;
Seek that, and that alone :
Nor squabble, out of mere self-love,
O'er crotchets of your own."

ERRATA.

In the first page of the last number of the Journal, Mr. Santy's name has been misspelt "Sautry." In page 315, "Ol. Menth. Pip. Aug," should be "Ol. Menth. Pip. *Ang.*"

Communications, Letters, Books, etc., Received.

Communications have been received from S. Knott, Royal Artillery, Shorncliffe ; Professor Axe, London ; J. W. Gadsden, Philadelphia ; R. S. Reynolds, Liverpool ; "Max" ; W. A. Hurrell, Southminster, Essex ; J, Collins, Principal Veterinary Surgeon, London ; R. F. Frost, Royal Artillery, Rangoon ; E. Moore, Albany, New York ; Dr. Acland, Oxford ; F. F. Collins, Principal Veterinary Surgeon, Bengal ; W. S. Adams, R. A., Oossoor, India ; J. Gerrard, Market Deeping, Lincolnshire ; W. H. Coates, London ; W. Broughton, Leeds.

Books : *J. Bendz*, Haandbog i den physiol. Anatomie af de almindeligste danske Hunspattedyr ; *E. Thierry*, Déontologie Vétérinaire ; *C. Ercolani*, Dell' Onychomykosis dell' Uomo e dei Solipedi ; *F. Fossati*, Inspezione Sanitaria degli Animali da Macello ; *D. Hübner*, Der Homöopatische Thierarzt.

Journals : *Repertorium der Thierheilkunde ; Archives Vétérinaires ; Recueil de Méd. Véterinaire ; Live Stock Journal ; Revue Vétérinaire ; Wochenschrift für Thierheilkunde und Viehzucht ; American Veterinary Review* (No. 8) *; La Veterinaria Española ; Lancet ; Medical Examiner ; Sanitary Record ; Medical Times and Gazette ; Der Thierarzt ; Edinburgh Medical Journal ; Practitioner.*

Newspapers : *Aberdeen Daily Free Press ; North British Agriculturist ; Montreal Gazette ; Freeman's Journal ; Australasian ; Illustrated Australasian ; Times ; Daily Telegraph ; Edinburgh Courant ; South Durham Herald ; Pacific Life ; Homeward Mail.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

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